

# THE FAR EASTERN REVIEW

FINANCE ENGINEERING COMMERCE

## VIOLETION OF THE BOXER PROTOCOL

Safety of Foreign Lives and Properties, Success  
of International Co-operation and Sanctity of  
Treaties Impaired by Independent Remission  
of Indemnities

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# The Far Eastern Review

ENGINEERING

FINANCE

COMMERCE

VOL. XX

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## Build China's Railways

### A Practical Use for the Boxer Indemnity

The Safety of Foreign Lives and Properties in China, Success of International Co-operation and the Sanctity of Treaties Rests Squarely on Faithful Observance of the Terms of the Boxer Protocol

Violation, repudiation and the shirking of international agreements and obligations is becoming such a commonplace that almost any powerful government can desert its associates with impunity. The world perhaps is moving towards the goal of universal peace through the creation of a league of nations or a world court, implying a willingness on the part of members to abide by its decisions and carry out their obligations. Can an international court or the council of the league compel obedience to its mandates if any one of the larger powers decides that its special interests can be better advanced by breaking away from its associates? Consider this question in its application to China. International intervention is again being urged as the solution to China's troubles. The purpose of this article is to prove that such a remedy cannot be applied with any assurance of success except when it is preceded by an irrevocable and solemn understanding between all the powers to stand with each other and share equally all responsibility until China is once more able to fulfill her treaty obligations.

It is pertinent and timely to ask the question: What is the sum total of the claims now filed with the foreign legations in Peking, representing the cash value of foreign lives, damages to properties and losses incidental to illegal taxation, interference with trade and treaty rights and other injuries not included under the head of defaults of interest and principal on loans or failure to pay commercial obligations? It is not too much to state that at the present moment when the powers are devising methods to release China from the Boxer indemnity that claims totalling Taels 100,000,000 have piled up in the various legations, and with no prospect of ever being paid.

THE controversy over the best way to spend the unpaid portion of the Boxer indemnity for the benefit of China raises a point of international law whose proper settlement is imperative for the future success of international co-operative movements and calls for the immediate convocation of a conference of those powers whose joint military action and diplomatic pressure brought China to her senses in 1900. Full and loyal co-operation between all foreign powers was the only weapon which saved the legations and forced the Manchu rulers to accept the joint note of December 22, 1900 with its demand for a lump sum indemnity as compensation for the loss of lives and damages to foreign properties during the Boxer outbreak. The note was signed by the representatives of Germany, Austria-Hungary, Belgium, Spain, United States of America, France, Great Britain, Italy, Japan, Netherlands and Russia and compromised each signatory to stand with its associates in exacting compliance with the indemnity terms until fully carried out.

In the Protocol, the Chinese government agreed to pay the lump sum indemnity of Taels 450,000,000 as stipulated by the powers in their joint demands. A subsequent protocol signed on June 14, 1902 and to which China was not a party, apportioned this lump sum amongst the powers according to their estimates of damages. As far as China is concerned her obligations are to all the powers—not to any one signatory. The protocol recognizes no individual indebtedness, therefore any modification of its terms or remission of the amount apportioned to any one power would

seem to be a matter which concerns exclusively those powers who signed the protocol of apportionment. The withdrawal of any one power from the international concert by negotiating direct with China not only impairs and invalidates the main treaty but makes extremely difficult that harmony and accord essential in carrying out other international undertakings.

We find, however, upon final adjudication of its claims, the American government found that they totalled less than the amount of the indemnity apportioned to it and in May, 1908, the bond received from China amounting to \$24,440,778.81 was reduced by congress to \$13,651,492.69 and the president was authorized to remit this to China as an act of friendship. In acting on its own initiative and without consultation with its associates, the action of the American government no matter how otherwise justified, would seem to be contrary to the spirit of the joint note of December 22, 1900 under whose "irrevocable" provisions the payment of the total indemnity by China was made possible.

America is therefore placed in the position of being the first to break away from its international commitments and in so doing furnished a precedent that has been taken advantage of by China and other powers to destroy the efficacy of the instrument designed to inspire respect for foreigners and their rights in this country. The German and Austrian portions of the indemnity were wiped out as a result of China's participation in the war on the side of the allies. Russia has voluntarily surrendered her claims; France will employ her portion for guaranteeing the obligations of the Banque Industrielle de Chine, Great Britain and Japan are formulating



plans to employ their shares in cultural and other propaganda, so it may be said that international solidarity for the protection of foreign rights in China has practically disappeared.

With the larger powers shirking their responsibilities under the protocol, what chance has Belgium, Spain, Italy and the Netherlands for collecting the balance due them? These smaller nations will be penalized in order that their stronger partners may derive special benefits from China at their expense. Such a conception of international co-operation will help to understand why it is now so difficult to bring about united action in the diplomatic corps at Peking.

At a time when international co-operation is most essential to the peace of the Far East and the proper development of China, anything which tends to weaken such united action should receive serious consideration, especially by America who now stands as the champion of international co-operation after withdrawing from the most vital undertaking entered into jointly by the powers for safeguarding foreign interests in this country. If the larger powers are to follow the lead of America and remit their share of the Boxer indemnity for special purposes, it is a matter which deeply concerns the smaller powers, one which properly should be made the subject of an international conference in which the United States could have no voice unless its government recognizes and admits its responsibilities under the original agreement and withdraws its right to act independently. China has no right to participate in such a conference. She can accept or reject whatever plan is agreed upon, but the chances are that any proposition which relieves her of the payment of the indemnity and at the same time conduces to her own benefit will be cordially received.

It is a significant fact that the protocol powers are now standing solidly together in refusing the request of the Chinese government to turn the old Russian legation over to the Soviet. The point involved goes squarely back to the demands submitted to China in the joint note of December 22, 1900 and the protocol which placed the entire legation quarter under foreign jurisdiction or extraterritoriality, an obligation on the part of China to *all* the powers from which no one power could recede and undermine or destroy the rights of the others. Now that the Soviet government of Russia has surrendered its extraterritorial rights under the new treaty with China carrying with it the extension of the principle into the Russian compound in the legation quarter, we find that the other protocol powers insist upon joint control over the property as part and parcel of the original deed of cession granted under the joint demands.

In plain words, the present attitude of the powers fully supports our contention. If the rule of solidarity is applied in order to preserve intact one clause of the protocol, it must also extend to any independent remission of an indemnity which as a lump sum was conceded by China to satisfy the joint claims and afterwards apportioned between the powers according to their own estimates of damages. If no one power can now impair the rights surrendered by China to joint jurisdiction over the legation quarter, no one power should be permitted to vitiate that clause of the protocol which acknowledges a lump sum indemnity. The obligations in both cases are identical.

The principle is the same as though one of the allies in the late war should now experience a change of heart and in order to advance its special trade or other interests with the central powers, suddenly discovers that its claims for reparations were grossly exaggerated and surrenders its claims and rejects any responsibility for the collection of the amount due to its allies. There is absolutely no difference in principle between such procedure and the action of the powers in breaking away from their commitments under the Boxer protocol.

An international conference of the indemnity powers should now be called. The danger to Chinese nationalism through the propagation of conflicting ideas of education, culture and politics should be recognized and some utilitarian program agreed upon that will bring the greatest good to the greatest number. An international agreement providing for the expenditure of the Boxer indemnity balance for new railway construction under the supervision of a technical head appointed by the powers concerned, would materially help to straighten out the complicated railway tangle and pave the way for a wider application of the principle of foreign supervision over loan built lines.

Although the United States is now the principal advocate of international co-operation in China, there is no telling when our

government will again denounce entangling alliances. American policy in this respect has been as unstable as water, the other powers never knowing what we would do next. Our failure to work in harness has since been emphasized in the senate's rejection of the Versailles treaty which abandoned our allies to work out their salvation in their own way and plunged Europe into a financial chaos which will take many weary years to straighten out. All this has a most important bearing on the present tendency to bring about further intervention in the affairs of China.

The American and British chambers of commerce of Shanghai, the American association of China and the China society are a unit in demanding firm co-operation between the powers in order to counter the ignoring of treaties, imposition of illegal taxation, outrages upon foreigners, banditry, piracy and other evidences of unchecked lawlessness that have many points of similarity with conditions leading up to the former catastrophe which compelled the powers to act in unison for the defense of foreign lives and property. Behind the shadowy pretense maintained in Peking by the war-lords to stave off the demands of foreign governments, defiance of the treaties is practised with impunity and the menace to foreign lives grows daily more alarming. It is this very impunity from chastisement and the payment of indemnities which encourages the war-lords to continue to flout the treaties and stand together as one man in defense of any of the bandit oligarchy who resort to Boxer methods in showing contempt for the foreigner.

Is international intervention the remedy for this state of affairs? Granted that the business-men of Shanghai are right, what guarantee has a coalition of powers that one of the partners will not break away from any new pact, repudiate its share of the responsibilities and reinstate itself in the good graces of the Chinese at the expense of the others?

There is no use shutting our eyes to essential facts. The record of murders, outrages, piracies, and other high crimes against foreigners these past few years will call for another huge lump sum indemnity and this can only be extracted from China in the same manner as the Boxer damages—by the concerted and firm action of all powers. It is not too much to state that the total of these new claims for damages will exceed Taels 100,000,000. Yet with this truth before us, we are witnessing a wild scramble on the part of these very same powers to release China from the indemnity imposed upon her in 1900. We have listened intently, but have heard no voice in high places advocating the employment of the Boxer funds to satisfy these new claims for damages. The powers fully understand that China is bankrupt, that even the expenses of government at Peking are unpaid, yet the claims for new damages against foreign lives and properties keep mounting up higher and higher with no possibility of their being paid for another generation. By that time or probably long before, another frenzy of repentance will be started by the missionary element and the score again wiped out.

It is useless therefore for foreigners to call loudly for concerted action between the governments for the protection of their treaty rights unless such action be preceded by an iron-clad and irrevocable understanding that no single power will recant or repent and double-cross its associates by releasing China from the penalties imposed in order to further its own special ends in this country. If such a program could be entered into and faithfully carried out, concerted intervention would probably clear the atmosphere and usher in a new era in the Far East. If it cannot be agreed upon, foreigners may as well forget about it and settle down to make the best of a bad situation.

It would seem that if the United States hopes to attain cordial co-operation with other powers in the reconstruction of China she would do well to reconsider her stand on the Boxer indemnity and join with her protocol partners in a new conference based on the terms of that instrument in order to determine the best method of releasing China from the indemnity obligations imposed upon her through concerted action. As far as we see, there could be no objection on the part of the United States if at this time the other indemnity powers come to an understanding for the utilization of the unpaid balance of their share of the indemnity for railway purposes, and as a guarantee that the agreement will be lived up to faithfully by China, impose the employment of another foreign adviser with the rank of inspector-general of indemnity railways which may lead in the future to the application of similar supervision over the other European loan-built railways on which the principal and interest is being defaulted.



This phase of the question is one which Americans may not lightly ignore. America stands before the world as the champion of international co-operation in China, the leader of the new consortium in which is pooled practically all the outstanding agreements for the financing and construction of new railways in this country. Some day the consortium will be prepared to function and its greatest difficulty will be found in inducing the Chinese to accept its ideas of supervision over the expenditure of the loans and the direction of the railways when completed. These guarantees the Chinese will not be disposed to give, so any international program which will pave the way for the proper investment of foreign money for railway purposes should merit serious study. Once the Chinese are convinced that such guarantees will not be employed to further impair their administrative independence and that supervision is essential if the country is to be developed with foreign loans, they will look with a greater sympathy on the viewpoint of the consortium.

The application of the combined Boxer indemnity funds to some such program under the direction of a foreign inspector-general would do more towards convincing the Chinese of the necessity of such supervision than anything else. It can be done. China is in no position to reject such an offer and the United States, as leader of the consortium, should take the initiative by reconsidering the manner in which she has broken away from her indemnity partners and join with them in a constructive program upon which, to a large extent, will depend the success of the consortium, and our diplomatic prestige in China.

America expects other powers to live up to the joint obligations imposed upon them through the consortium and the four-power and nine-power treaties. In these matters, faithful adherence to the principles involved are calculated to preserve American ideas of what is best for themselves and for China. Other powers are, however, more interested in the material development of China than in her cultural and educational progress. America has broken away from her associates to advance her special cultural interests at their expense. The time has arrived when there should be a coming together on these matters and if America expects cordial and loyal co-operation, there should be some reciprocity, some sacrifice of our ideals for the benefit of our associates. This article shows a practical way out, one that can be applied with advantage to all. At the rate we are going, the present generation will be dead and forgotten by the time the consortium is ready to function. In the meantime, China rots and decays for lack of transportation facilities, while foreign firms are being forced one by one to the wall through China's inability to pay her obligations. Education, sanitation, cultural and spiritual uplift will not solve the problem. Loans to China at this time are out of the question. Colleges will not build railways but railways will build colleges. Let the Boxer indemnity do the work.

G. B. R.

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## Why Waste the Boxer Indemnity on Education?

### Build Railways and Provide Employment for the Masses

(CONTRIBUTED)

IT is now five years since the consortium was organized to finance China and its attitude remains uncompromising in regard to loan terms. China harbors the delusion that her undeveloped resources conceal the world's last Eldorado and with her credit ruined, dreams of borrowing money for railway construction on the old unrestricted Pukow terms. In the meantime, she is trying to advance along her own lines. Education has made great strides; the clerical classes are rapidly increasing and the professions are crowded out of all proportion to the demand. There are three government colleges devoted to the education of civil and mechanical engineers, railway traffic officers and employees of other government services. From these institutions graduate at least one hundred engineers annually and a still larger number of embryo traffic officials, all relying upon the government to furnish them employment. In addition, there are the returned American students to be provided for. The government does its best to meet these expectations and the effect of its philanthropy is well illustrated in the enormous

increase in railway personnel since 1916. The following table is illuminating:—

Year			Kilometres worked	Personnel	Trains per day
1916	..	..	7,049	59,857	11
1919	..	..	7,183	73,651	11
1922	..	..	6,279	91,356	12

It is seen that in 1922 with less mileage operated than in 1916 and with only a slight increase in traffic, the number of railway employees has almost doubled. Here we have the logical consequences to the Chinese system of dual control which breeds nepotism of the worst kind and to the weak handling of the bolshevist labor agitation (arising in large part from an over production of college educated employees) which culminated in the disturbances of October 1922. Since the abolition of the old classical examinations in 1904 the student problem has been a nightmare to the Chinese government. The examinations were revived in 1906 but the successful candidates were never employed by the government. Yuan Shih-kai saw in the student class a dangerous political element and found employment for a selected few in order to bind them to his cause. These men have been willing recruits to the various militarist factions which have grasped the reins of government during recent years. The student class throughout the country has developed into an element of unrest, instigators of agitations against foreigners and meddlers in international relations. Their record is one of childish intervention in politics, of college and school strikes and disobedience to their tutors. The government has always temporized before this insubordination and applied local solutions when the problems became acute. Yet in the face of this record the foreign powers now propose, though the use of the Boxer indemnity for educational purposes, to add to the embarrassment of the Chinese government by reinforcing an element already far in excess of national requirements.

To those at all conversant with the condition of the Chinese government services this can only appear as a futile waste of money. The only way to put the Boxer indemnity to useful purposes is to create employment, not only for the technical graduates but for the masses, by allocating the annual interest on the total of the fund to the construction of new railways in accordance with a fixed program supervised by a technical adviser appointed by the powers concerned. According to official returns the Boxer indemnity in January 1920 was apportioned as follows, calculating the French, Italian and Belgian portions at 25 francs to the pound sterling and omitting the minor claimants:—

Great Britain	..	..	..	..	£11,180,000
France	..	..	..	..	17,650,000
Italy	..	..	..	..	5,920,000
Russia	..	..	..	..	30,760,000
Japan	..	..	..	..	7,530,000
Belgium	..	..	..	..	1,870,000

Total .. .. . £74,910,000

Deducting Russia's share and disregarding amortization, there remains the annual interest at four per cent. on £44,150,000 to devote to railway construction, or £1,766,000 equivalent to approximately \$14,000,000 silver. Unquestionably, the most urgent railway project is the completion of the Canton-Hankow line, upon which depends the unification of North and South and the development of Canton. For similar pacification purposes and the elimination of the Yangtze above the gorges as a highway of trade, the construction of the Hankow-Szechuan railway is next in importance. These two projects should have the first claim on the remitted Boxer indemnity. With 60-lb. rails at the current price of \$100 (silver) a ton; bridges and culvert openings totalling 90 feet per mile and embankments and cuttings averaging ten feet in height or depth, the present day costs of railway construction in China is \$75,000 per mile, exclusive of rolling stock, or, \$85,000 per mile fully equipped. The heaviest work would increase the cost to \$100,000. The annual interest on the total of the Boxer indemnity could therefore construct a minimum of 140 miles of line a year or a maximum of 180.

Such a program would provide employment for thousands of workers, bring incalculable benefit to Chinese and foreign trade and infuse new life into the railway service now suffering from stagnation and overcrowding. The indemnity powers should insist on the faithful execution of the yearly program and extract guarantees that the revenues from the lines so constructed are allocated for new equipment or additional construction. Under such a program



supported by all the interested powers a foreign railway expert could be appointed to supervise the "indemnity" railways who would rank in importance with the inspector-general of customs and the head of the salt gabelle.

It is to be hoped that this vast sum of money will not be wasted at this time on superfluous and unwanted education but expended under some common agreement between the indemnity powers for the creation of public utility works like railways that will confer material benefits on Chinese and foreign trade, provide employment for the host of technical graduates and an army of workers and contribute towards the pacification and unification of the nation by linking the north with the south and the east with the west in bonds of a common understanding. The present system under which each indemnity power seeks to gain some particular advantage through the employment of their portion of the remitted Boxer funds for special purposes only tends to perpetuate international discord by recreating spheres of influence disguised under an altruistic mask. The consortium was organized in order to supplant international competition in the development of China by international co-operation in furnishing the funds, and because of the chaotic conditions and absence of guarantees and security for such loans, nothing has been done to carry out its program. Political spheres of interest were eliminated under the terms of the consortium agreement and made impossible of resurrection by the provisions of the nine-power treaty signed at the Washington conference. Political spheres, however, are being superseded by a more insidious system of peaceful penetration under the guise of philanthropy. America is silently pushing ahead her plans to dominate the educational and spiritual sphere by spreading her ideals and doctrines amongst a people wholly unfitted to assimilate them, breeding discontent and agitation which in the end will defeat the more practical plans of other nations who entertain no illusions about the capacity of the Asiatic to absorb western ideals.

The success attending the American program has provided the precedent for other powers to protect their interests in China along similar lines and as a consequence we find the British, French and Japanese governments devising plans for the expenditure of their share of the Boxer indemnity that will counteract in part the Americanization of the young Chinese mind. The logical outcome of this tendency will be to partition China into several cultural spheres permeated with ideals so conflicting that pacification and political unification under Chinese standards will become impossible. If the American example is followed by the other powers, international conflict for control of China will be perpetuated, only instead of actual armed strife between the powers, the brunt of the fight will be borne by their spiritual converts and partisans striving to graft their conception of foreign ideals on to the Chinese body-politic. If the Chinese are to work out their own destiny they should be permitted to follow their own conception of ethics, culture and government, in which the west can teach them little that is superior to their own. Herein lies the fallacy and weak point of the American program and if followed by other powers in pursuit of their own special ends, can only retard the political development of this country and invite a continuation of the unrest into which the country has already been plunged by attempting to digest too rapidly a political salad mixed from the many recipes supposedly adapted to Chinese taste from a confusion of foreign menus.

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## America's First Obligation in China

### Build the Szechuan Railway

#### Further Thoughts on the Boxer Indemnity

**I**N order that Americans may get a common-sense perspective on this much discussed Boxer indemnity question, we must commence by asking ourselves the questions: What are we here for in China? Are we here as traders or are we here as philanthropists? On the proper answer to these questions rests not only the efficacy of our policies and future prospects in this country but the right to ask other powers to co-operate with us in carrying out Far Eastern treaties.

Now we are told by our statesmen, by our orators, by our captains of industry and by our strategists that our chief concern in China is the maintenance of the "open door" doctrine, guaranteeing

to Americans the unimpaired right to equal trade opportunity. In every instance where our government has taken a decided stand on Chinese questions it has been in some way connected with our conception of the "open door" principle, and whenever our jingoes and greater-navy advocates seek convincing arguments for the purpose of prying loose an increased appropriation from congress, they invariably harp on the urgent necessity of defending the "open door" doctrine in China. Now it is a fair statement that American trade in this country has grown to its present proportions, not through any particular efforts of our own, but as the direct result of the investment of European capital in the development of its railways and other industries. Americans have done little but talk about what they are going to do some day in the future, at the same time placing obstacles in the way of others doing anything that might in some remote way deprive them of equal opportunity whenever in their judgement the time is opportune to exercise that right.

In our opinion, if the United States has contracted any obligation in China, it consists in a duty to resolve its high principles into some practical program that will contribute towards the further growth of a trade which to date has been made possible largely through the initiative of others. We do not wish to be placed in the position of opposing education or of belittling the meritorious work of our missionaries and educators. They have their own organs and champions who make themselves heard at every opportunity and are able through a perfect organization to bring pressure to bear on Washington which no politician dares to ignore. *THE FAR EASTERN REVIEW* is here to advance American trade interests, but for the past twenty years we have witnessed the gradual side-tracking of national commercial activities until to-day the principal American business in China is the distribution of charity. The time has arrived when our trade interests are entitled to more consideration. It is the duty of our government to devise some practical program that will enhance our commercial prestige in China through the investment of capital in productive enterprises.

The United States has assumed certain definite development obligations in this country which completely overshadow its humanitarian duties. We received in 1903 a promise from Prince Ching that in the event foreign capital became necessary to build the railway from Hankow into Szechuan, American and British capital would be given the preference. In 1905, the British, French and Belgian groups interested in this concession, pooled their activities and invited the Americans to join. We declined. Four years later when this same combination was ready to sign a contract for the construction of the Hukwang railways, which included the line into Szechuan, we demanded admission into the group and President Taft went so far as to send a friendly ultimatum to the prince regent to obtain participation for American capital.

Again, in 1916, the Siems-Carey Company signed a railway contract with the Chinese government which conflicted with rights previously ceded to other powers and after two years of surveying finally located a line into Szechuan, only to have it protested by the British. The point we desire to emphasize is that Americans are now morally committed to build a railway into Szechuan, an obligation imposed upon us as the outcome of two strenuous diplomatic fights to uphold our conception of the "open door." We forced the door open but never walked through to see what was on the other side. We contend that this obligation transcends in importance any other claim on our finances and we believe that the American government would be wise to take steps to make good its policies through a practical program that will at least equal in part the labors of other nations in developing the resources of China.

It is for this very practical reason that we invite attention to the hokum and buncombe concealed in a program which ignores common sense and violates elementary economics. In this matter of the Boxer indemnity and its contingent features, congress assented to economic principles that if applied by its members to their own affairs would land them in the poor house. We would like to hear the classic roar of the watch-dog of the budget when he awakes to the fact that someone slipped over a philanthropic deal on congress which costs the nation twice as much as the amount given away.

Let us see how this works out. We release China from an *irrevocable* penalty imposed upon her for the murders, violations, outrages and other indignities inflicted upon our nationals in 1900 and hypnotize ourselves into the belief that we are in some sort of fashion, saviors of China. We invite the other treaty powers to a good, old-fashioned Methodist revival meeting at Washington and



under the hysteria of repentance promise to undo our collective mistakes and henceforth respect China's sovereignty by the abolition of extra-territoriality. We then calmly forget all this flubdub and vote an appropriation of over four million good American gold dollars to construct six gunboats to patrol the rivers and inland waters of China in order to assure protection for American lives and properties against the fury of mobs, bandits, pirates and disorderly soldiery. The picture is enlightening. Here are all the treaty powers lined up, solemnly compromised to surrender their extra-territorial rights in this country, while congress with one hand votes for the remission of an indemnity imposed as a penalty for previous outrages upon American citizens and on the other hand votes a greater amount from the treasury to provide a guarantee that these outrages will not be repeated! Viewed from this angle the remission of the Boxer indemnity for educational purposes at a time when the American people are called upon to pay out a greater sum in order to protect American lives and shipping in China, is as much a grab from the American treasury as though some congressman dipped his paw into the pork barrel when "H & M" Dawes was not looking and drew out a ten million dollar appropriation for a federal building in Squeedunk or a river and harbor improvement for Olapaloosa creek.

We can expect that in five, or ten years at the outside, foreign extraterritorial rights in China will be considerably impaired, if not altogether abolished, and the right to navigate China's inland waters will be denied to foreign vessels. In ten years, the cost of six Yangtze River gunboats and their maintenance will approximate \$15,000,000 gold and by that time the railway into Szechuan will be operating and the Yangtze patrol sent to the scrap heap. In view of these facts, would it not be better economy for the American government to take its share of the Boxer indemnity amounting to \$6,137,552 and add to it the cost of constructing and maintaining a Yangtze fleet and employ the fund in some manner to carry out the obligation it has incurred to build a railway into Szechuan? At a cost of \$50,000 gold a mile, the \$20,000,000 involved would build and equip some 400 miles of railway, eliminate the Yangtze gorges as an artery of transportation and open up an inland empire to world trade. There will be no need for gunboats on the upper Yangtze when the railway into Szechuan is built. This, it would seem, is real philanthropy, common-sense economy and the highest kind of statesmanship. As it now stands, these \$20,000,000 will be wasted on an education entirely unsuited to the culture of the people and in maintaining a gunboat patrol to defend what at best is only a temporary shipping gamble that will disappear as soon as the railway is constructed.

One of the penalties imposed upon China for the Boxer outrages was the razing of the Taku and other ports impeding free communication with Peking and the right of the powers to occupy with their troops certain points that would assure the same object. This penalty was not enforced until 1912 when the revolutionary movement looked as though Peking might again be cut off from communication with the sea. An international force was then sent to guard the line of the railway from Peking to Shanhaikwan. The Boxer protocol, after creating the legation quarter, conceded to the powers the right to maintain permanent guards for its defense. These clauses are responsible for the presence of a small international army of occupation in North China with a detachment of marines acting as American legation guards and a regiment quartered at Tientsin to patrol our sector of the Peking-Mukden Railway. The cost of maintaining this American force in a foreign country with whom we are at peace, is part of the annual army and navy appropriation, but it cannot be less than \$1,500,000 a year.

At a time when the principal powers are releasing China from the monetary penalties arising out of the Boxer troubles and committed to surrender their extra-territorial rights, it would seem that the first step as a token of good-faith should be the withdrawal of their armed forces. That this has not been done provides sufficient evidence that the legations lack faith in China's ability to protect them against any possible anti-foreign disturbance. The fear of another outbreak is always present. We do not trust China. We try to fool them by remitting the indemnity as a token of friendship but copper the bet by retaining sufficient troops on the spot to see that they remain friendly; the story of the Yangtze patrol applied to the army.

In the final protocol, provision was made for carrying out the Hai-ho and Whangpoo River conservancies. In the case of the latter the improvements have reached a stage where unless greater

harbor facilities are now provided, the port of Shanghai will dwindle in importance and lose its position as the distributing point for central China. Further improvements depend largely upon an extension of the settlement that will include the new port project designed by an international commission of experts, but to date the Chinese authorities have evinced no interest in the scheme or any indication that it will ever be approved and carried out. Meanwhile the port of Shanghai with its immense foreign vested interests is menaced with decadence. It would seem that if Great Britain and the other maritime powers were anxious to protect the interests of their nationals in this port, that the remission of their share of the indemnity might have been made contingent upon China's acceptance of the Shanghai harbor scheme and extension of the settlement. As it is, by vitiating one clause in the "irrevocable" terms of the Boxer settlement, the powers concerned have surrendered the weapon which would have compelled compliance with another clause upon which their trade interests to such a large extent depend.

The diplomatic body at Peking is standing firm on the inviolability of the clause in the Boxer protocol which creates the legation quarter, the right to defend it and maintain open a road to the sea, yet their respective governments (with the exception of France) have signed the Washington treaties providing for the abolition of extra-territoriality and the annulment of all agreements which in any way impair China's sovereign rights. Germany, Austria and Russia have surrendered their extra-territorial privileges and there is reason to believe that the present Japanese cabinet is seriously considering the same step.

Will the abolition of extra-territoriality, when it comes, vitiate the clauses in the Boxer protocol which gives the powers exclusive jurisdiction over the legation quarter and the right to maintain guards for its defense? With three of the world powers outside the protocol combination and the possibility that Japan will break away in order to advance her own vital interests, a rather embarrassing situation will be created. With Germany, Austria, Russia and Japan willing to trust to the honor and ability of the Chinese government to protect their legations, how long can America, Great Britain, France and Italy hold out and maintain their armed forces in North China?

There are many angles to these questions which space does not permit us to take up. The whole problem bristles with difficulties and inconsistencies. The situation is unsettling to the peace of the Far East and menacing to the vital interests of every foreigner engaged in business in China. It is not a question of what concerns any one nation. It concerns us all.

If these changes are to come, why wait for the situation to be muddled and complicated through international jealousies and intrigues to gain special advantages? Why should not China herself invite attention to the dangers arising from this new "battle of concessions" disguised under the garb of friendship and benevolence and ask the protocol powers to a new conference in order to discuss these matters and seek some way in which her higher interests may be advanced by the friendly remission of the Boxer indemnity?

G. B. R.

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## "Willard Straight"

**The Combination of Idealism, Finance and Politics which Forced an International Financial Monopoly on China**

**An Important Contribution to Modern Far Eastern History**

*"Willard Straight" by Herbert Croly, published by The Macmillan Company*

ASIDE from the irreparable loss to his family and friends it was a great pity that the promising career of Willard Straight was so abruptly terminated by his demise at a time when his accumulated knowledge of Far Eastern finance and politics would have proved of incalculable benefit to American activities in China. Straight was the only American in that small group of international financiers who knew more about foreign policies concerning China than the frequently changing diplomatic representatives of their respective governments. We are told that an era of international co-operation has been ushered in by the consortium; that China's status has been permanently defined in the nine-power treaty, but in the event the consortium fails to function and the pooled rights and concessions revert to their original holders, the time may arrive when



Americans will have cause to regret the untimely death of one of the few experts of their nationality who could sit around the table with the financial diplomats of the other powers and talk their own language. It took a long time to perfect his education in these matters. Like most young enthusiasts his heart overruled his head. In time, however, intimate contact with the best financial and political intellects of other nations gave him a more enlightened insight into the realities of the game and before he died many of his earlier ideas had been displaced without sacrifice of his ideals, by a more mature and statesmanlike view point.

Straight possessed those rare qualities which endeared him to friends and won the admiration of his opponents. Enemies in the strict sense of the word, he had none. Had he lived, he would have assumed a leadership over American activities in China that would have welded together discordant elements for the better attainment of national ends. Although Straight's ideas were at times open to fair criticism, he came nearer to being the ideal leader of Americans in China than any of those who have since posed as such before their countrymen. He was fortunate in starting his career at a time when broad-minded Americans interested in Chinese finance and railway construction were willing to sacrifice, or at least side-track, their own plans in order to get behind him and support a national policy.

It is no detraction from Straight's achievements to state that only those few who had completed the preliminary work of organizing an independent American financial group to operate in China, can appreciate the bitter disappointment and heavy penalty imposed on them by being frozen out of the field through the formation of the official banking group with its monopoly of support from the state department. These men had their own plans for financing and constructing railways in China, yet they accepted gracefully their elimination and did nothing to embarrass or hamper the working of the official group in carrying out its conception of a national program. In fact, they at all times worked with it. In the light of subsequent events and the failure of all enterprises initiated by the official group, we have often thought that a fundamental mistake was made in limiting American activities in China to a favored monopoly. Had the field been thrown open to competition when America first began to take an interest in Chinese investments it is certain that many valuable concessions would have been financed with the result that America's vested interests would now equal those of other countries, instead of being confined to the paltry \$7,500,000 participation in the Hukwang loan, for which we have nothing to show, not even in the supply of materials.

The fallacious idea that European financial groups enjoying a monopoly of support from their respective governments, were the instruments for carrying forward predatory designs upon China, was accepted as a reason why an official American group should be formed in order to defend China's integrity and give expression to our conception of the "open door" principle. There were excellent reasons, imperfectly understood even at this time, which fully justified France, England and Germany in extending a monopoly of diplomatic support to trusted national financial groups. It was the only safe and expeditious manner by which these governments could counter the political railway moves of the others. There was no good reason, however, for the extension of this principle to America, nor for the program initiated by the American group once it entered the field, at a time when it embraced many wonderful opportunities for advancing national interests through independent operations. Had the American group started in by carving out a sphere of its own (it had practically all of south and southwest China to work in without creating international complications) instead of deliberately seeking contracts and concessions which raised the issue of the "open door" at a time when America was in no position to give practical effect to its doctrine of equal opportunity, or, had independent financiers been permitted full liberty of action, greater headway would have been made. By confining our activities to a quixotic official monopoly which from the first was more interested in raising delicate international issues and fighting China's battles than in seeking legitimate opportunities for the investment of American capital, a fine opportunity was thrown away.

The operation of the official American program as so clearly described in Mr. Croly's life of Willard Straight was confined in the beginning to negotiations which far from being nationalistic in scope seemed to be concentrated in giving expression to the rather vindictive determination of Harriman to penalize Japan for failing

to sell her rights to the South Manchuria Railway. Straight's attitude towards Japan was largely influenced through his failure to achieve this particular objective in the Chinchow-Aigun Railway contract and subsequent currency loan negotiations. The story of these intrigues is too long to review here, but it can be said that each step of the American group raised new questions and fresh complications whose only solution seemed to consist in expanding the official monopoly until the six big world powers had China firmly in their grasp.

There were, it is true, insuperable obstacles to the success of an independent American program in China which at that time were basic. It is rather a sad commentary on American diplomacy to learn that after creating a financial instrument with a monopoly of official support to combat the activities of European groups in China, it developed that American bankers were so dependent upon European money markets that they could not underwrite an important foreign loan without asking their opponents for help! To quote from Mr. Croly's life of Willard Straight: "The obstacles to an independent policy were, as Willard Straight also well knew, almost insuperable. Among them the one which looked most insuperable to the members of the group as practical bankers was the knowledge of their inability to float any very large volume of Chinese securities on the American market. *They were offering to lend money to China not because American investors were interested in business opportunities in the Far East, but because the state department wished to promote American influence in China.* They were obliged to consider first of all how and when they could redistribute the burden of the proposed loans and felt themselves dependent in this respect on the money markets of London, Paris and Berlin." Such was the instrument devised by our state department to advance American prestige in China and uphold its conception of the "open door." No wonder the European governments never took us seriously. In effect, the success of the American portion of the Hukwang loan, amounting to only \$7,500,000 gold, was made possible because it was subscribed for largely by European investors who kept their securities in American safe-deposit vaults in order to escape the payment of the stamp taxes imposed on foreign loan bonds by their own governments.

Armed with a gun that wouldn't go off, and dependent upon the enemy for ammunition, the American government ventured into the thick of an international political fight hoping its hand would never be called. That Willard Straight was permitted to sit so long in the game and get away with what he did is a tribute to his ability and personality. Any other type of player lacking his *finesse*, geniality and lovable qualities would have jarred the nerves of the others and at the first bad break, would have been counted out of the game. Willard Straight played a losing hand according to the best American traditions. He won a number of hands that were not called and in the end had to divide his winnings with the other players.

Conditions are now reversed. America is the financial centre of the world and compromised to carry her European partners in any large Chinese loan flotation. We have the money, but Americans are still indifferent to business opportunities in China and because of the weakness of our diplomacy in safeguarding foreign investments, the support of the state department does not inspire the confidence that will enable our bankers to successfully issue a large Chinese loan. This guarantee so essential to the successful operation of the American group, is supplied by the consortium with its support of four great powers. Before the war, dependency upon European money markets compelled America to accept international co-operation in financing China; the same principle is now invoked in order to provide those guarantees without which the American investor will refuse to hazard his money in this country. So, if not in one way, then in another, international co-operation is essential to American success in participating in the development of China.

Had Willard Straight with his clear conception of justice and square-dealing lived long enough to learn of the existence of the secret Sino-Russian treaty of alliance of 1896 he would have been the first to recognize it as the missing key to the Chinese puzzle, the explanation why so many of his own schemes were frustrated. He would have conceded a tardy though none the less hearty justification to Japan whose presence in Manchuria he objected to as proof of a determination to duplicate the process by which Korea was made part of the Japanese empire. In his later years, Straight swung around and became an ardent supporter of American-



Japanese co-operation, conceding Japan's right to participate in the Siems-Carey canal improvement scheme without even referring the matter to the state department for approval.

In explanation of his resignation from the service of J. P. Morgan & Company Mr. Croly uses a letter written by his wife explaining his attitude during these years towards his business, and in this paragraph is seen the real character of Willard Straight, the idealist chafing under the fetters of practical business.

"Willard's abounding energy was contagious and exciting and his mental activity never flagged. He was forever dreaming dreams, albeit practical ones at that, and working out new ways of doing things and new things to be done. Almost every evening he would come home from the office with the same words on his lips—'I had a new idea to-day.' In spite of myself I was forced to become the critic, for though many of his plans were sound in conception the means of execution were often not at hand. In many instances he was unable to convince his superiors of the value of his ideas and then it became my task to prevent him from dwelling on what he considered his own ineptitude and to show him that circumstances themselves had created the *impasse*. Wall Street was uncongenial and difficult for him, though he loved and admired many of its leaders. His point of view was diametrically opposed to that of the business man. He felt the importance of building for the future as well as for the present, and to this end he worked to establish sound commercial relations with other countries irrespective of the return in profits. He did not like to bargain: he hated competitive enterprise. He wanted to see certain things done: he cared little who did them: and it nearly broke his heart to see his ideas still-born because they did not promise to become immediately profitable. He had plans for helping China, for the establishment of better trade relations with South America, for a labor policy in one of the big banking houses, for making old traditions live and new ideas circulate, for mutual understanding between the peoples of the world—plans in general for more enlightenment at home and for higher commercial morality abroad. Most of his plans were destined for the scrap-heap, though many were adopted with profit by his employers. But he was considered too radical, too much of an idealist, too deficient in business experience. He obviously needed another field for the exercise of his imagination."

The combination of politics and finance known as "dollar diplomacy" is a game omitted from the education of American bankers yet they were willing to assist the state department in every way for the advancement of national prestige in other lands. There was a limit, however, beyond which they could not safely go without incurring public condemnation. The activities of the American group in China raised questions which in those days could only have been solved by a resort to arms. The United States was being placed in a very delicate position from which it could not withdraw with honor except through war, or compromise. It was, therefore, only natural that, in adding up the balance sheet of its operations, a group interested solely in material profits should wonder where all this was leading the nation and it is not surprising that its displeasure should fall upon its representative. The achievements of Willard Straight in China when translated into figures in the ledger of the group occupied a very prominent place in the red ink column. Even in his subsequent activities as vice-president of the American international corporation, Straight was pursued by the same fate which transformed his other Chinese ventures from innocent looking commercial undertakings into dangerous international political issues. The Siems-Carey canal and railway contracts taken over by the American international corporation

for financing had to be abandoned and later pooled in the consortium which their signature had made necessary as the only way Americans could participate in the development of China's railways.

Willard Straight's experience was that of other capable, ambitious and aggressive Americans who set out to save China from the consequences of her own follies. Other men imbued with the same high ideals accomplished equally big things only to see their work defeated by the operation of international intrigues combined with official ineptitude and changing policies at Washington. Straight left the impress of his personality on American activities in China, setting an example of high-mindedness and purity of motive which followed the best traditions of his country. His failures are traceable solely to an ignorance of political truths concealed from Americans by the operation of secret diplomacy. If Straight erred, so did all the rest of us. All his American co-workers saw things in the same light and their minds reacted in unison to the facts as we then knew them. Straight was right and he received a full measure of loyal support and the confidence of his countrymen in China. One of the reasons why Americans in China are now divided is because a large proportion is still living in the same atmosphere that Straight worked and moved in. Another section of the community recognizes that new facts have shed new light on the Chinese problem compelling a reversal of the old anti-Japanese outlook which guided Straight in his campaign to free China from what seemed at that time like deliberate aggression.

Straight was the true type of the idealist in finance, having little concern for business or profits as long as the principles he sought to establish were accepted. His life story as told by Mr. Croly is an inspiration for other young Americans; the chapters describing his work in China a most important contribution to Far Eastern history, on a par with the "Secret Memoirs of Count Hayashi" and the "Memoirs of Count Witte." It rounds out the history of the days following the Russo-Japanese war and sheds the cold light of truth on the origins of American policies in Manchuria.

Willard Straight's biographer is inclined to lay too much emphasis on his part in bringing about international co-operation in the financing of China. From many points of view this was a worthy achievement but after all is said, the sad truth seems to stick out a mile high that such a solution to China's problems was forced upon the American group as the penalty for its rather theatrical entrance into Far Eastern politics, inadequately equipped financially to carry out the program of a government at that time wholly unprepared in a military sense to exact respect for its policies and lacking the moral support of the nation that would have justified a determined stand for the observation of the "open door" doctrine.

It is regrettable that a prominent American editor should so far forget himself as to permit the reproduction in a serious book of the most undignified, and uncalled for insult yet applied to the Japanese people. Such ignorance of Kipling and sowing of the seeds of racial hatred, calls for an immediate apology to the Japanese people from Mr. Croly and the Macmillan Company, and the repudiation of the book by the state department. One American diplomat is placed in such a delicate position that his future usefulness is seriously impaired through a reference to a secret code that only irresponsible and silly children would be guilty of using.

G. B. R.

## Japan's Answer to America

**S**UMMARIZED in a few words Japan's official attitude towards the American exclusion act is one of dignified silence, resting her case for the present on a protest that the law is inconsistent with the terms of the 1911 treaty and pointing out the fallacy of the American explanation that the Japanese while not inferior are unassimilable. This, Japan contends, is a dogmatic argument not borne out by any conclusive fact. The reaction of President Coolidge, Secretary Hughes and public opinion in general to the exclusion law as being inconsistent with the sense of justice and

impartiality and contrary to the ethics of international courtesy has influenced the Japanese government to reject the view that the immigration issue has been brought to a final or fundamental conclusion.

In fact, as far as Japan is concerned, the diplomatic battle is only beginning. Japan will be patient and permit America to be condemned before the world by her own actions and words. There will be no boycott of American goods. Business is not built on political sentiment and trade between the two nations will not be hurt. There is no thought of war or preparations for war. Japan's



case is too strong to permit it to be lost by any foolish display of anger. An over-sensitive congress has destroyed the work of generations but another congress can undo the harm and reinstate Japan in world esteem. America has armed Japan with a weapon whose legitimate use will align all the world powers with vital interests in Asia against us.

Although not voiced officially, there have been many semi-official statements and utterances of public men in Japan which challenge the right of Americans to assume that the Asiatic while not inferior, is unassimilable. There is a growing resentment against a doctrine which closes the doors of the west to the Asiatic and demands the right to invade Asia for the purpose of elevating the status of its people to the level of western civilization. The Japanese are asking why it is necessary for Americans to contribute annually millions of dollars to uplift the Asiatic if they are not held as inferior? Does not this one fact, they argue, prove the inconsistency of America? If we are equals, why force your doctrines of superiority upon us? If we are not permitted to assimilate western culture and habits in a western environment, by what process of reasoning is it assumed that we will absorb American ideals and be elevated to American standards of morals and living by a religious or cultural campaign carried out amidst Asiatic surroundings?

These questions are difficult of answer. No self-respecting people, be they white, black, yellow, brown or a mixture of two or all of these colors will suffer any longer than is absolutely necessary the implied slight concealed in a doctrine which bars them from lands because they cannot fuse in the melting pot and then proclaims the right to maintain their own countries an open field for religious, cultural and other propaganda which, however skilfully presented, implies the superiority of the proselyter. Sooner or later, America must answer this challenge from a race which resents our efforts to undermine the foundations of its own culture and civilization.

Japan's answer to the American exclusion act will be indirect. It will come through the application of a new policy towards China in which her own vital interests will be placed before those of her associates who have driven her to seek a fundamental solution to her problems in Asia. Reconstruction of Japan's policies based on the earliest possible abolition of extra-territoriality and the elevation of her legation at Peking to the status of an embassy is now practically decided upon. Ambassadors to Peking will be selected from amongst the foremost men of Japan, and China will be expected to send men of equal rank and prestige to Tokyo. The Japanese believe that their special relations with China demand the early application of this program.

One outcome of the exclusion agitation is that Japan is now convinced and alive to the necessity of bringing about a thorough mutual understanding with China. A fair and just policy that will cement the two nations together in ties of political, economical and cultural co-operation is entirely consistent with the objects of the Washington conference, and if other powers further postpone the conference for the abolition of extra-territoriality, Japan may take such independent steps as will assure to her people that outlet denied them in other parts of the world.

In another article we have drawn attention to America's remission of its share of the indemnity in order to advance its special cultural interests in China. It would seem that if one nation can evade its international obligations in order to further its special position in China, Japan is equally justified if she breaks away from her partners to the Washington treaties and placing her vital interests above those of her associates, enters into direct negotiations with China for the abolition of extra-territoriality. As the exclusion clause in the American immigration law forces Japan to seek a future outlet for her rapidly increasing population in the only place they can safely aspire to go, there could be no reasonable objection, if Japan should enter into separate negotiations with China for the solution of questions forced upon her by America. That the Chinese are now relying upon Japan to assist them in bringing to an early settlement the question of extra-territoriality is well understood in Peking.

Any such fundamental change in the Far Eastern political situation will sooner or later cause lively concern to those European nations whose interests in Asia may be placed in jeopardy by any radical departure from the *status quo*. The far-reaching consequences arising out of America's exclusion of Asiatics will not be confined to Japanese-American relations. All the powers having important interests in Asia will feel their effects. In the present temper of Europe, the United States can count on few friends who

will stand with her as against Japan. If Japan should bring her case before the league of nations and demand a reopening of the racial equality question, arbitrarily dismissed by President Wilson when it came up for discussion at Paris, there is little doubt what the reaction of the members of the league would be. America would maintain its position regardless of what the league might say or do, but with Europe convinced that America has consistently shirked her international obligations, it goes without saying that its sentiment on the racial or immigration issue would be strongly against us if only for precipitating grave complications which seriously affect European prestige and interests in Asia.

Because of America's one-sided diplomacy as exemplified by our independent attitude after becoming a party to the Boxer protocol and our rejection of the Versailles treaty and withdrawal from the league we insisted on tacking to the terms of peace with Germany, together with our subsequent refusal to take an active part in the solution of post-war problems, we have ceased to count as a factor in world politics as far as Europe is concerned. Our allies in the late war resent our repudiation of responsibilities incurred at Paris and our insistence in giving advice without helping to bring to a practical solution the problems we assisted in creating. In the meantime, Japan has faithfully and scrupulously adhered to and carried her full share of the burdens imposed upon her by the league and in consequence has won many friends and created many obligations. From the European viewpoint, American domestic politics have once more flouted world opinion. In order to pass a useless law, reaffirm a right which no one disputed and respond to a menace that did not exist, the American government has deliberately sacrificed the fruits of years of prudent diplomacy and undone the good work of the Washington conference.

If the aftermath of Asiatic exclusion in America throws China and Japan closer together, causing Japan to stand solidly with China in international matters and breaks down the bulwark of foreign prestige in the Far East by the abolition of extra-territoriality, Americans cannot fairly hope to retain the cordial friendship of those great powers whose immense interests in China will be obliterated. For, with the abolition of extra-territoriality, disappears forever the right of the foreigner to interfere in China's affairs, the dawn of a new era in which the Asiatic will be master in his own house.

A petulant American senate playing picayune domestic politics has again thrust itself over the head of the state department into the arena of world affairs, jeopardizing world peace and the prestige and position of every European power in Asia. "After this, why continue to speak of the foreign policy of the United States. How can other nations expect from their American associates that constancy in purpose and persistence in effort which they do not practice in their own behalf," asks Pertinax in the *Echo de Paris*.

America has placed herself in a decidedly disadvantageous position by giving offense to Japan whose retaliation may lead to the elimination of European influence in Eastern Asia. Here, unquestionably, is one of those major political questions in which other nations besides America are affected by our independent policies. America has asserted her right (one which no other nation has ever disputed) to decide for herself a question involving her sovereignty over domestic affairs, without pausing to reflect or give heed as to how it might react on the vital interests of other white nations in Asia. America rejects the idea that immigration is a question which concerns the rest of the world and in so doing invites consequences which in time will completely undermine and destroy the carefully built up positions of our associates in the Far East. It would seem, therefore, that this is a question that might properly be submitted to an international conference, where some formula recognizing the right of each state to enact its own immigration laws could be adopted and at the same time avoid giving cause for offense or needless loss of prestige to other nations.

America's enormous wealth and potential strength may enable us to disregard world opinion and escape those obligations which a league of nations or an international court of justice might impose upon us, but, such a course has its obvious disadvantages. If we refuse to co-operate with the rest of the world in defense of their conception of a program that will operate for the good of humanity, we cannot expect them to adhere religiously to those policies devised by ourselves for the protection and advancement of our own special interests. There is always the danger of isolation or retaliation by others paying us in our own coin.



## Asiatic Exclusion

### Grave Consequences

AN interesting sidelight on the operation of American exclusion laws bearing out our contention in regard to real Chinese sentiment on this question, is seen in the charges recently preferred by the Chinese six companies of San Francisco in a communication transmitted through their attorney to President Coolidge and members of his cabinet. The substance of these charges is the long standing grievance over the treatment accorded Chinese merchants and scholars entering the United States and now extended to those traveling first class. The Chinese complain that these privileged classes are subjected to indignities, delays and unnecessary hardships at Angel Island where conditions are alleged to be insanitary and the officers hostile to Asiatics. These delays and hardships are not experienced by first class passengers of other countries and the Chinese six companies protest against the discrimination to which their nationals are subjected.

The revival of this grievance only serves to accentuate the fact that the undercurrent of resentment in China against our exclusion laws is as strong to-day as it ever was in the past. Although the stay-at-home Chinese may entertain most friendly and kindly feelings for Americans whose philanthropies he enjoys, this sentiment is not shared by his countrymen whose fortunes compel them to brave the ordeal of passing the officials charged with the execution of our immigration laws.

It is only a question of time when the operation of the Japanese exclusion clause in our immigration laws will subject eminent Japanese business and professional travelers to the same treatment now accorded the Chinese and although our officials may perhaps see no indignity in the methods employed in the execution of their duties, the sensitive Oriental gentleman will experience a loss of face that may be borne meekly, or otherwise.

The charges submitted to the president by the Chinese six companies were answered by the U.S. immigration commissioner at the port of San Francisco who says that the law calling for the examination of first-class cabin passengers from China was invoked last January by the department of immigration when it was shown that Chinese laborers were slipping into the country in first-class cabins. This, of course, is probably true, for when the risks and costs attending the smuggling of Chinese laborers into American territory from Mexico, Cuba, Jamaica and other near-by countries are considered, it is only natural that the comparatively easy and more economical route via a first-class cabin passage will be adopted by those who can afford it.

It is only a question of time when similar charges will be brought against the Japanese. It is difficult to believe that federal officials at the port of San Francisco appointed from the state of California will be free from the influence of the labor unions and organizations whose long-drawn-out campaign against the presence of Japanese laborers in their state has finally resulted in their exclusion from the country. In the same way that the number of Japanese who came in legitimately was exaggerated, this same element will now declare that the law is being evaded by laborers entering the country as first-class passengers under the privileges accorded the exempted classes. The demand will be made for a more rigorous application of the law subjecting all Japanese first-class passengers to the same treatment now accorded the Chinese. The Chinese have complained time and again without any apparent amelioration in the rigid application of the law. If Japanese travelers of prominence are subjected to the same treatment it will result in an intensification of the existing bitter feeling against Americans and provoke an energetic protest on the part of their government. The protest may go unheeded but it will unite the Chinese and Japanese into a closer bond that in time will be expressed in retaliatory measures.

Americans cherish the hope that their altruistic and disinterested policies towards China will in time enable their influence to dominate the Orient but it is difficult to visualize the realization of such dreams when the application of our exclusion laws humiliates the best classes of the people we most desire to impress. For the time being we have broken down the resentment of the Chinese by posing as the champion of their sovereignty against the encroachments of other powers; we have silenced their protests and drowned

their complaints by the clink of gold poured into the country for uplift work, but the time will come when the Asiatic will declare his independence and demand the right to live his life according to the ages-old ideals upon which his civilization is founded. The East will not always tolerate activities based on the assumption that its civilization is inferior to that of the West. It will resent the hypocrisy embraced in the formula "it is not that we consider the Chinese or Japanese inferior that we exclude them, but because they cannot assimilate our ideals and civilization."

The time will come when the Asiatic will challenge the doctrine which holds them as inferior in the lands of the West and makes their own countries a field for the unrestricted activities of missionaries, philanthropists and general uplifters whose main purpose is to elevate their status to conform to western standards of civilization. From this point of view it is sheer impertinence to bar the Asiatic from America because of his alleged unassimilability and menace to Western institutions and then foist our standards upon him in his own home under the provisions of treaties extracted at the muzzle of the gun. If the Chinese and Japanese are not considered as an inferior race, why should Western nations continue to contribute millions annually in order to force our civilization upon them?

If any foreigner entertains the delusion that the Chinese meekly accept our assumption of superiority, his mind will be disabused of this hallucination by reading what Mr. Liang Shih-yi had to say to a gathering of Chinese students in London only last month. He told his young countrymen that while they were absorbing the civilization of the West not to forget to transmit something of their own, for in many respects the civilization of the East was superior to that of the West. The West," he added, "prided itself on many material inventions that were known to their forefathers centuries ago, but the Chinese had never advertised their knowledge nor had they attempted to force their civilization upon others." Here spoke the real voice of old China. The East has never forced its civilization upon others. In fact, all it asks of the world, is to be let alone. The words of Mr. Liang interpreted rightly mean that while outwardly acquiescent, China deeply resents the forcing of Western ideals upon a people schooled in a philosophy which has stood the test of centuries.

It was only a few weeks ago that a speaker at the national conference of Christian associations in Japan declared that America is responsible for commercializing Christianity and advocated shaking off the "monetary yoke" the parent missionary bodies in America have saddled on Christian organizations in Japan. In other words, Japanese Christians resent the employment of American gold for the maintenance of missionary bodies whose activities are slowly sapping the foundations of a civilization which has held the nation together for centuries. Liang Shih-yi said the same thing more diplomatically, reflecting the general sentiment of Chinese scholars and thinking men who have watched the missionary activities in their own country grow from small beginnings into an army of workers whose vested interests now overshadow in importance those of legitimate trade. The Chinese have seen the missionary, educational and philanthropic interests of America grow into a position of power where they practically dictate the policy of their government and influence the selection of its diplomatic representatives. They have silently witnessed without protest the gradual undermining of their institutions and ideals before a propaganda backed with unlimited millions under the pretext of improving their status and raising it to the level of the West—and deep down in their hearts they object to it.

The American exclusion law has started a train of thought in Asia that will have far-reaching and grave consequences to the interests of every foreign nation in this part of the world.

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### For a Better Foreign Service

AMERICANS who believe that their government is called upon to intervene in China and bring the blessings of our beneficent tutelage to its distracted people, should read the speech delivered by Secretary of State Hughes at the Hotel Astor in New York on May 15. In a pessimistic survey of domestic politics



Mr. Hughes asserted that the American people appear to be failing in self-government. "Our greatest difficulty," he said after reviewing American success in private fields, "seems to lie in government. We seem to make a mess of that. In our forty-eight commonwealths and hundreds of municipalities and in our federal organization we have the greatest profusion of governmental agencies and through candidacies and campaigns of one sort or another the most unceasing activity the world has ever seen under one flag."

Although the secretary did not touch upon the relations existing between the federal government and our over-seas territories he might well have emphasized these as conclusive evidence in support of his argument. Territories, naval stations, possessions, protectorates and other territorial responsibilities are administered by different departments of our government, while the development of Alaska is throttled under the supervision of some twenty independent commissions or bureaus. It is one grand mix-up. An intelligent policy directing our activities in these widely scattered regions is lacking and as a result every man Jack of the mixed races, languages and religions in each and every one of these lands that prosper under our altruistic guidance, are discontented and pray to their various deities to be delivered from our philanthropy. They don't want us and lose no opportunity in letting us know it.

Americans were already headed for a fall in China where under the enjoyment of extra-territorial privileges conferred by the treaties their activities had become so confused that every department of the government with the exception of the interior, was functioning and exercising jurisdiction of sorts over their nationals. In certain instances, officials of these departments attempted to assume precedence over the diplomatic and consular services which under the treaties represent the federal government in foreign lands.

Secretary Hughes may have had this situation in mind when he asserted that Americans made a mess of their own government and he might have told his audience how in China the department under his direction had finally asserted and established its authority by bringing about a system of co-operation and co-ordination that might well serve as an object lesson in the administration of non-contiguous territories, a precedent for the reformation of our chaotic "colonial" service under a special bureau responsible to the state department. With the Philippines, Hawaii, Porto Rico, the Canal Zone, Virgin Islands, Santo Domingo, Haiti, Samoa and Guam and other non-contiguous territorial responsibilities governed by trained officials of the state department the nucleus of a foreign service would be created that would attract the best men in the country and in time develop a governing group equal to the best in England. We know of nothing that would conduce more to the prestige of the American government abroad and at home than to bring all our over-seas activities under the supervision of the secretary of state. Such a step is a logical corollary to the foreign service bill, the one essential towards the creation and development of a department which in the last analysis, is responsible for our foreign relations and the settlement of disputes that must arise from time to time between these non-contiguous possessions and their immediate neighbors. Perhaps one way to educate the American people to the realities of government, especially in so far as they relate to the co-ordination of activities in our dependencies, is through the creation of a foreign service department which would serve as an object lesson to the others. As long as the present system, or lack of system is permitted to continue, we will make a mess of governing other peoples.

### American Co-operation in China

As a direct outcome to the lack of co-ordination of American departmental activities in China and to the independent attitude assumed by businessmen in passing strongly-worded resolutions demanding intervention in the affairs of this country and to articles printed in this magazine calling attention to this state of affairs, the president of the United States on April 14 issued an executive order which clearly defines the centre of American authority in foreign lands. In all cases the officials of the state department take precedence over the officials of other American government services assigned to duty in foreign lands. Fortnightly meetings are required to be held under the direction of the highest officer of the diplomatic or consular service at which all officials of other departments must attend and report their activities. Outwardly, the order is one which exacts co-operation and the recognition of credit

where credit is due: but underneath its formal wording is a determination to put a stop to further encroachments upon the functions of the state department by officials of other departments detailed for work or observation abroad. The channel of communication with the government at Washington must be through the state department, a ruling extending to commercial and other associations which in several instances have ignored the existence of the responsible authorities in communicating with the government at Washington.

As far as China is concerned, American interests have been impaired by the utter absence of harmony between the official, missionary and business elements and as a consequence officials at Washington could do little to properly advance national interests in this country. As a last resort, the president was induced to issue the executive order in order to bring Americans together in some sort of common understanding under responsible leadership.

Following the receipt of this order, Minister Schurman journeyed from Peking to Shanghai to effect a clearer understanding and closer co-operation between the American legation, consulates, businessmen and missionaries and to work out a co-ordinated policy and definite program to be followed by all groups. The interests of the businessman will be fostered and advanced as part of the general national program, and he will learn just what limitations he must work under in order to co-ordinate his private interests with the welfare of other legitimate national activities in this country. In other words, President Coolidge has set an example in China that might well be followed up by the application of similar principles in non-contiguous territories of the United States under a service specially created for this purpose.

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### Mitsui and Uncle Sam

**D**URING the oil investigations at Washington an ex-secret service spy by the name of Gaston B. Means blew the lid of the department of justice by testimony which left the American public gasping. He told of shadowing senators and other public men and even Secretary Mellon of the treasury department, a story of wholesale intrigue and espionage that recalls the days when Fouché kept Napoleon accurately informed of the movements of all officials of the state. His story indicated a state of affairs in high places in Washington more shocking than anything yet brought to light in connection with official corruption in other countries. Fortunately, his word was unsupported; the proofs were lacking and judgement has been suspended.

There was one point in his testimony, however, of special interest to our readers having to do with an alleged cash bribe of \$100,000 paid by Mitsui & Company to prevent an investigation into the affairs of the Standard Aircraft Company charged with having defrauded the government in the aircraft scandal during the war. It was found that Mitsui & Company had financed the aircraft enterprise and it was alleged that this financial interest was the cover under which American military airplane designs were acquired and transmitted to the Japanese government. This, of course, excited public interest and was seized upon by the anti-Japanese element to stir up resentment against Japan. The fact that Mitsui & Company's lawyers is the eminent firm of Caldwell, Wickersham & Taft (one of the partners a former attorney general of the United States and another a brother of a former president and present chief justice), seemed to make no difference to the anti-Japanese agitators. The further fact that Mitsui & Company aided in furnishing the capital for the Standard Aircraft Company because it wanted to be of some assistance as an ally to the United States in winning the war, carried little weight. American capital might be employed freely in the industries and enterprises of its allies, but to reverse the principle and admit foreign capital, especially Japanese, into an American war industry seemed to savor of treason.

It is interesting therefore to read the full denial of the charges brought against the Japanese firm in which the latter offered to submit their books to a full investigation by the proper authorities. The denial and offer were contained in a letter signed by Shigeji Tajima, New York manager of the company, which was sent to Senator Smith W. Brookhart and the other members of the Daugherty committee.

The manager summed up the situation by stating that Standard Aero and Aircraft corporations were devoted exclusively to the production of airplanes for the United States government, and that



Mitsui & Co. financed the company and received in exchange only 6.7 per cent. interest on the money, and "no profits whatsoever."

The letter follows:

New York, April 4, 1924.

Hon. Smith W. Brookhart, Chairman, Daugherty Investigating Committee, United States Senate, Washington, D. C.

DEAR SIR,—It has been reported in the press that Gaston B. Means, a witness called before your committee upon the investigation of Attorney General Daugherty, testified that he received from a Japanese, who stated that he represented Mitsui & Co., the sum of \$100,000, and that he turned this sum over to Jesse Smith. In some of the newspaper accounts it is stated that it was Jesse Smith who informed Means that the sum had been received from Mitsui & Co. As the opportunity to meet this testimony may not be afforded to us, or may be postponed for some time, I deem it proper at this time to make an emphatic and comprehensive denial of the truth of the statement made by Mr. Means. I also deny with equal emphasis the statement reported to have been made by Mr. Means that Mitsui & Co. has ever acted, directly or indirectly, as paymaster for the German government, or has received or disbursed money for the account of that government. The same may be said with reference to the Japanese government. We never have acted as the fiscal agents of that government in this country.

### Makes an Unqualified Denial

I am the manager of Mitsui & Co. at its principal office in this country, which is in this city, and I am consequently familiar with every detail of its financial transactions. If there had been any such payment as that mentioned by Mr. Means it would certainly have come to my attention, and, of course, would have been reflected in the accounts of the company. I am, therefore, able to assert without qualification that no such transaction was ever authorized or ever took place. No sum of money was ever paid to Mr. Means or to anyone else connected with the department of justice, or with any other department of the government, in connection with the Standard Aircraft transactions. This may be confirmed by an examination of our books, which you are at liberty to make at any time.

Mitsui & Co. held the preferred stock of the Standard Aircraft Corporation, and that corporation was indebted to it for money advanced to an amount of nearly \$2,000,000. After a settlement of pending contracts with the government on June 24, 1919, the corporation was dissolved and out of the moneys received from the government Mitsui & Co. received from the corporation the par amount of the preferred stock, in addition to the amount of the indebtedness for the advances above referred to, with interest. The representatives of the government asserted that, upon the establishment of the claim against the aircraft corporation, they proposed to procure reimbursement from Mitsui & Co. for the amounts so received. The claim against the aircraft corporation was first asserted through the air service bureau of the war department in June, 1921.

This situation made it necessary for Mitsui & Co. to see to it that a suitable defense was made to the claim of the government.

Auditors of the government made an examination of the books, accounts and vouchers of the Standard Aircraft Corporation. Over thirty persons were occupied upon this audit for a period of about five months. The report of the audit was furnished to us and the auditors of the receiver of the Standard Aircraft Corporation were engaged many months in examining the conclusions of the government auditors and were able to show that the report of the government auditors was so full of inaccuracies and mistakes as to be practically worthless. Upon the reports of the auditors of the government and of the receiver of the Standard Aircraft Corporation, protracted hearings were had before a board of five members in the air service, liquidation branch, finance section, of the war department. Elaborate briefs were submitted to the board and the whole matter involved consideration of voluminous documentary evidence. The record of these hearings is, of course, a matter of public record available to your committee. The brief submitted by our counsel, Messrs. Cadwalader, Wickersham & Taft, was printed and dealt with every aspect of the claim. It is a document of 260 printed pages, and I beg herewith to hand to your committee a copy of it.

### Dealt with War Department

At no time since the claim was asserted have we or our counsel appeared before or had any communication with any representative of the department of justice. If that department has been con-

sulted concerning the merits of the claim of the government or our defense, it has been without our knowledge, although some quite indefinite rumors came to us at one time that the department was making some kind of an investigation. But so far as we are concerned, in February, 1922, and ever since, the matter has been in the charge of officials of the war department.

Some mention was made in the testimony of the witness Means of statements made by Harry B. Mingle, a former president of the Standard Aircraft Corporation. Mr. Mingle was not familiar with the details of the claim of the government. The Standard Aircraft Corporation had been dissolved, and as one of its liquidating trustees he had possession of its records and books. He early assumed an attitude of antagonism to Mitsui & Co. As neither he nor the dissolved corporation had the sources to present a proper defense, it became necessary for Mitsui & Co. to cause steps to be taken to procure from Mr. Mingle the custody of the books, papers and records of the corporation which were in his possession. A suit in equity in this state was, therefore, commenced and resulted in the appointment of a receiver, Mr. Wilson M. Powell, who was represented before the war department board by our counsel, Messrs. Cadwalader, Wickersham & Taft, who have been ever since in charge of the matter. The controversy which led to the termination of all control by Mr. Mingle will appear from the bill of complaint and affidavits in the equity suit, a copy of which I beg herewith to hand you.

Captain Scaife, who was a witness before your committee, made certain statements which I desire to correct. He is evidently incorrectly informed as to the proceeding in the war department, which I have accurately described above. If the committee desires to advise itself as to the condition of the audits referred to by Captain Scaife, we presume that they will be produced by the war department upon request.

Captain Scaife is reported to have said that a Mr. or Major Coleman, who was a disbursing officer in the air service when considerable sums were paid upon the contracts of the Standard Aircraft Corporation, was in the employ of Mitsui & Co. at the time the audit referred to by him was made. This statement is entirely without foundation. Mr. Coleman was never in the employ of Mitsui & Co. I never heard of him.

The newspapers reported that Mr. Lane made a number of statements in regard to the amounts paid by the government to the Standard Aircraft Corporation on account of depreciation and raw material. His statements are not true. For example, the statement that the asset account of Standard Aircraft Corporation included a loss of \$1,619,000, sustained by Mitsui in financing the Sloane Manufacturing Company, is wholly without foundation. The exact facts appear in detail in the audit prepared for the receiver of the Standard Aircraft Corporation and filed in the war department. They are discussed in considerable detail in the enclosed printed brief, filed with the war department.

To sum up the whole situation, we wish to call the attention of your committee to the fact that the Standard Aero and Aircraft Corporations were devoted exclusively to the production of airplanes for the United States government and that they were financed by Mitsui & Co. out of their own resources, and that Mitsui furnished all the necessary working capital and received in return only the money which it had invested in and advanced to the corporations with 6 per cent. interest and absolutely no profit whatsoever. This is not a case where any war profits were received. All production was under the strict supervision of the United States government officials. The employees were all Americans, and Mitsui only aided in furnishing the capital because it wanted to be of some assistance to the United States and allies in winning the war.

If I or any other person connected with Mitsui & Co. or the counsel for ourselves or for the receiver can be of assistance to you in a further investigation of this matter I shall be glad to have you call upon us.

Yours very truly,

SHIGEJI TAJIMA.

\* \* \*

## France and Japan

TOKYO may deny and the Quai d'Orsay protest till it is blue in the face that the recent visit of Governor-General Merlin to Japan had no international political significance, but world politics being as they are it is only natural that explanatory official *communiqués* will be interpreted as smoke screens thrown out to



conceal the real object of Franco-Japanese *rapprochement*. No amount of specious reasoning can disguise the truth that France feels that she has been abandoned by her late allies to face alone the menace of a reinvigorated and vindictive Germany now reinforced by Russia, or that she holds America responsible for her present desperate position.

What is true of France, is true in equal measure of Japan. America congratulates herself that Far Eastern and Pacific questions were settled for the next ten years at Washington, but there was one defect in the treaties signed at this conference that can only be remedied by separate understandings between the powers most vitally concerned. That defect was the failure to include Russia in the parley and provide a real substitute for the Anglo-Japanese alliance. Americans could see in this instrument only what their own fears and Chinese propaganda wished them to see—a possible menace in the event of a war with Japan. In destroying an effective instrument and replacing it with a four-power alliance to respect each other's territories in the Pacific, Japan was left to oppose single-handed the pressure of Russia on China and Eastern Asia.

The elimination of the Anglo-Japanese alliance was a great victory for American diplomacy, but as we have pointed out on various occasions, our security in the Pacific was purchased at the expense of Japan in Eastern Asia. We gave Japan nothing in exchange for a sacrifice which deprived her of a formidable ally at a time when her traditional enemy was coming into her own. We turned back the pages of history thirty years and must now pass through another cycle of secret understandings which will undo the good work accomplished. We abandoned France to work out her own salvation in the face of a German "come-back" and then isolated Japan, stripping her of every legitimate defensive advantage gained as a result of unremitting vigilance and preparedness over a period of twenty years. The most natural thing in the world is for the two isolated powers to come together in some understanding that will offset in part the selfishness of their world partners.

As a side-light on this situation we are informed that a Japanese commission recently visited Bukharest to arrange military co-operation between Japan and Roumania in the event of a Russian attack on either country. Roumania, it is well known, may be forced into a conflict with Russia for the possession of Bessarabia. Now, Roumania is a member of the little *entente*, consequently, a *protege* of France. Merlin's visit to Tokyo may have been confined to extending the scope of Franco-Japanese commercial activities, but with the knowledge that France has not yet ratified the Washington treaties; that Japan's position in Eastern Asia is daily becoming more precarious; that France and her *proteges* of the little *entente* are uneasy over the moves of Russia and Germany; that both Japan and France are alarmed over the proposal to build

a huge British naval base at Singapore; it would seem to be a reflection on the intelligence of the French and Japanese governments if M. Merlin failed to discuss these problems during his recent visit to Tokyo and propose some plan for united action in the event either country was pressed too hard.

Such thoughts may be discouraging to the people of many countries interested in building up international tolerance and good-will and who see in such coalitions an invitation for counter coalitions, but what other remedy can Japan, France and the little *entente* apply to offset the sinuous return of Russia to a position which menaces the vital interests of them all? France stands alone, so does Japan, with no international guarantee worth the paper it is written on, that other nations will come to their assistance in case they are attacked.

We have recently witnessed in China's recognition of the Soviet and the latter's reinstatement to a position of equal control over the Chinese Eastern Railway, one potent reason for a Franco-Japanese understanding. French financial claims added to Japan's legitimate equity in the line as spoils of war denied to her at Portsmouth through the operation of secret diplomacy and her financial claims provide these two powers with an argument for standing together that must carry considerable weight and command due respect if supported by a determination to employ force for the protection of their interests.

It was not for nothing that Baron Shidehara, newly appointed minister for foreign affairs in Japan, recently said that "the foreign relations of Japan are now confronted with many and various perplexing problems and in the future Japan may expect these to increase and become still more difficult and the nation must be prepared to meet these troubles with a just and courageous stand. Machiavellian diplomacy and aggressive programs are things of the past and international relations must proceed on the broad principles of justice and peace as exemplified by the Versailles treaty and the Washington conference."

This is certainly the right spirit, but it is apparent that Japan's foreign minister recognizes that in adhering to it the limitations of diplomacy will be taxed to their utmost to find an honorable solution to the increasing perplexities of the many problems forced upon the nation through the treaties of Versailles and Washington. Baron Shidehara knows that Far Eastern problems were far from being solved at Washington and that unless some extension of the four-power treaty is made that will protect Japan's interests in Eastern Asia, a supplementary convention may have to be made with Russia or failing this, with France and the little *entente*.

We may fool ourselves that the affairs of Eastern Asia were nicely settled at Washington, but time will prove that neither Japan or France can be isolated, stripped of their defenses and exposed to the certain attack of powerful and vindictive enemies without somebody paying the penalty.

## Remarkable Change in America's Foreign Trade

### Far Eastern Markets Most Promising Asset

**A**MERICA is a favorite of fortune. No matter how indifferent our investors are to Far Eastern industrial possibilities, and despite chaos in China and other considerations which should operate against our trade expansion, the balance in our favor keeps piling up year by year until the Asiatic market bids fair to become our most valuable asset. What the figures would be under a more enlightened and aggressive program, proper advertising of our products and pushing salesmanship, is left to the imagination after digesting the current trade returns. In calling attention to this remarkable change in our foreign trade, The National City Bank of New York says that when Europe was plunged into war, it slowed down production, with two results. It partly disabled itself from buying and it largely abandoned to us the foreign markets

which it had supplied. Latterly, our trade with the Orient has in a measure made up for declines in our trade with Europe. In the eight months ending with February our exports to Asia and Oceania increased 44 per cent. For the fiscal year ending with June, our exports to that region promise to exceed \$700,000,000, as against \$200,000,000 in 1914.

Japan's needs after the earthquake enlarged her takings of materials, bought with borrowings from America. But that is exceptional and not in the same class with the fact that our sales to Oriental buyers were 75 per cent. manufactures, and largely machinery. There was an item of 34,568 automobiles during eight months of the current fiscal year thus far reported. That is an increase of 156 per cent., over the same period of last year, while those to other parts of the world increased only 44 per cent. We sold to Oriental



customers 23,000,000 pounds of tinplate, against only 1,000,000 last year. We sent China 35,000,000 pounds of copper, against 14,000,000 and more than doubled our flour exports to that country. Of cultural significance is the doubling of our exports of printing presses to the British Orient. Thus far, at least, we have held our own in the post-war competition of production at costs permissible in world trade.

These are the greatest unexploited markets in the world. If the Orient were to consume on the same scale as the Occident the potential demand would be too great for any but the boldest to calculate. If the whole world ate bread at the same rate as Americans there would be a world demand for eight times as much flour. If all other nations drank coffee as freely as Americans a ninefold production would be required.

### Larger Returns Through Advertising

Of special interest to the engineering trade is the increasing market in Japan for machinery and tools of all kinds. According to Trade Commissioner P. P. Steintorf the most important single item in America's exports to Japan is machinery which, although fairly well advertised, would reap large benefits by a more thorough and comprehensive campaign. Other commodities include machine tools and industrial equipment of all kinds, and construction and railway equipment and supplies.

Specialties such as typewriters, cash registers, adding machines and office equipment have an excellent field, as the Japanese are always eager to adopt new things. There are shops in Tokio with a total floor space of 10 by 12 feet which have as their chief article of furniture an elaborate cash register. This is cited by Mr. Steintorf as an example of the universal Japanese tendency to utilize modern implements—a tendency that could be used to advantage in extending the sale of American specialties.

### Reconstruction Orders

Although reconstruction purchases of permanent materials have not been made in any large quantities, several important orders have been recorded amongst which is one placed by the Japanese government with the Nippon Electric Company (the Japanese subsidiary of the Western Electric Company) for automatic telephone central office apparatus to the value of \$3,500,000 to equip five central stations to serve 25,000 subscribers. This apparatus will, however, be manufactured largely by the Automatic Telephone Company, Ltd. of Liverpool, one of the enterprises associated with the International Western Electric Company. An electric generating plant to cost \$25,000,000 has been provided for in this year's budget to be erected on the Shinano River for the supply of power to the government railways and the service of Tokyo.

### Manchurian Possibilities

An important development in American trade through the sale of equipment to the South Manchuria Railway is being made by the appointment of a special American investigating committee with headquarters at the consulate in Mukden.

American trade in Manchuria now occupies second position, the amount reaching nearly \$25,000,000 gold a year. The American committee includes a member of the consulate-general at Yokohama, well versed in Japanese, and a Japanese clerk working with the Mukden consul-general, two vice-consuls and several American and Chinese staff.

Commenting on this, development an official of the South Manchuria Railway Co. said:

"Articles imported from the United States into Manchuria include railway apparatus, machinery, steel, cotton yarn and piece goods, petroleum, and flour, the last mentioned being imported in large quantities, exporting beans and bean oil principally. Thus far, Americans in general influenced by prejudice, were inclined to keep away from the Japanese. Of late this attitude has greatly changed, Americans realising the importance and advantage of co-operating with the South Manchuria Railway Co., if they wish to expand their trade in Manchuria, and are now trying to come as near to the Japanese as possible. This is most encouraging for advancing the economic development of the region, which cannot be undertaken by Japan, or China alone but can be carried out by Americans. The business of the South Manchuria railway will be much increased, hence there is every necessity for the Company to give them all assistance they require."

### Co-operative Cotton Sales Office

A rather important and significant development following closely on the heels of the passage of the exclusion law, is the deter-

mination of the cotton co-operative associations of the south to hold and extend their trade with Japan by having their own sales representative on the ground. Japan is using over 700,000 bales of American cotton every year, and General Sales Manager C. B. Howard, of the southern cotton exchange, believes that Japan offers the co-operative marketing associations a good field and will open a sales office in Japan within a very short time, the first sales office in the Orient.

### Far Eastern Trade Returns

The actual figures of Far Eastern trade returns compiled by the U.S. department of commerce show that the increase in Far Eastern trade of the United States accounted for half of our total trade increase in the nine months ended March, 1924. Our exports to the Far East increased \$154,458,508, or 38 per cent. during that period, and our imports from the Orient declined \$29,040,174, or 4 per cent., making a net increase in total trade of \$125,418,329. Every country in the Far East took more of our goods this year than they did last year for the same period.

Far Eastern trade amounted to 23½ per cent., of our total trade for the nine months as against 20½ per cent., for the corresponding nine months of 1923.

Exports to Japan account for the greatest increase, from \$157,154,636 in the nine months ending March, 1923, to \$243,804,552 in the same period for 1924, increased shipments of raw cotton bought forward at favorable prices last summer account for some of the increase.

Exports to China increased from \$72,374,350 in the 1923 period to \$91,843,478 in 1924.

Exports to Australia show a remarkable increase from \$68,892,690 in 1923 to \$95,987,232 in 1924, Australia forging ahead of China as the second country in our exports to the Far East.

Exports to the Philippines increased 25 per cent., to \$41,345,080 in 1924; exports to India 15 per cent., to \$24,792,032; exports to New Zealand 13 per cent., to \$19,201,574; exports to Dutch East Indies, 36 per cent., to \$9,891,953 and exports to the Straits Settlements 6 per cent., to \$5,131,594 for the nine months' period.

Decline in imports was general except from Straits Settlements, which showed an increase from \$85,534,025 to \$98,971,623; Dutch East Indies an increase from \$31,887,372 to \$38,817,017, and the Philippines from \$48,421,610 to \$55,210,095. China showed a slight increase of less than one per cent. Imports from Japan declined 14 per cent.; from India 5 per cent.; from Australia 28 per cent., and from New Zealand 10 per cent.

### Imports from China

The growing importance of the raw and semi-raw materials of China to the United States is shown by the increasing importation of these products. Imports into the United States from China during 1923 aggregated \$187,602,172, as compared with \$134,609,105 in 1922, an increase in two years of nearly 40 per cent. These imports for the most part are basic raw materials for use in further production and the most important single product is silk, which represents about 44 per cent., of the total imports from China. In 1923 China imports of silk into the United States amounted to 12,261,561 pounds, valued at \$83,395,432, as compared with 8,378,079 pounds in 1922 with a value of \$56,609,881. China's share in the total raw silk imports into the United States in 1923 amounted to approximately 21 per cent., which is an increase of about 5 per cent., compared with 1922.

That China teas were in greater demand in the United States last year than for some time, was indicated by the aggregated imports of \$3,330,166, which is an increase of \$1,202,451 over 1922 imports. Chinese teas, formerly one of the principal exports of that country, are beginning to return to old markets with annually increasing shipments.

Wood oil imports from China, which is practically the only source of supply for the United States, increased from \$7,891,251 in 1922 to \$13,397,000 in 1923, which is the largest importation of this commodity into the United States on record. The growing dependence upon China for this almost essential ingredient in the manufacture of paints, varnishes, etc., is indicated by the increasing demand from the United States.

Other products of China which showed material advances during 1923, are carpet wool, raw cotton, goat and kid skins, soya



bean oil, carpets and carpeting, and miscellaneous hides and skins. Other commodities which figure less prominently in the imports from China are bristles, eggs and egg products, laces and embroideries, hairnets, strawbraid, etc.

### Japan Takes 26 Per Cent. of American Steel Exports

The following table shows the proportion of seven leading American steel products sent to Japan in the five years since the war and the total exports in gross tons:—

AMERICAN EXPORTS, 1919 TO 1923, INCLUSIVE, IN GROSS TONS.

	Total	To Japan	Per cent.
Steel plates .. .. .	2,170,164	508,013	24.3
Rails .. .. .	2,115,398	555,794	26.2
Black sheets .. .. .	894,162	453,309	50.7
Tin plate .. .. .	739,731	188,947	25.5
Galvanized wire .. .. .	655,899	123,506	18.8
Galvanized sheets .. .. .	490,160	41,515	8.4
Wire nails .. .. .	312,067	85,885	27.5
Total .. .. .	7,377,581	1,956,969	26.5

A nation which purchases 26.5 per cent. of a country's steel exports over a five-year period is of vital importance to that industry's foreign trade says the *New York Journal of Commerce*. The buying of over half the foreign sales of black sheets and practically one-fourth the foreign shipments of four other leading products must have some influence on the market trend in each case.

No other steel exporting country can point to a similar situation in its foreign trade. Too much dependence on one or two countries is not to be desired. But were it not for Japanese and Canadian purchases our exports would sink to insignificance. In any event, the thought is uppermost whether it is wise to legislate away the friendship of a people whose power as an industrial factor in the world's trade has only commenced and whose influence in the Pacific and in the development of the Far East will be larger rather than smaller. As a nation in need the co-operation of Japan has more than one aspect.

### China's Silk Exports Affect Japanese Industries

Perhaps the most striking feature of the United States trade returns is the increase in the volume and value of silk imports from China, which last year reached 12,261,561-lb. valued at \$83,395,432 or about 44 per cent. of the total, compared with 8,378,079-lb. valued at \$56,609,881 in 1922. This increase was due in part to the temporary breakdown of the Japanese silk market following the earthquake and fire and to the sustained propaganda conducted by the silk association of America to offset the rather fickle fluctuations of silk quotations in Japan. At the present rate of growth it will not be many years before China's silk exports will deprive Japan of her pre-eminence in that industry. Far-seeing Japanese are looking ahead to the time when they must face this radical change in their economic conditions and are planning to establish other industries or expand their present facilities in order to live. This, they admit can be accomplished only by a readjustment of wages and living standards that will permit them to manufacture and export other products on a much larger scale than heretofore.

The competition created in China in order to break the Japanese silk monopoly, must result in the long run in handing over to Chinese control the industry upon which rests Japanese prosperity. China's capacity for silk production under more enlightened methods must be enormous but as in everything else, the absence of reliable statistics makes difficult any exact estimate of her total output. This is generally estimated as twice the volume of exports.

The trade returns for the past ten years show the following:—

Bales	Bales
1912 .. .. . 121,877	1918 .. .. . 96,366
1913 .. .. . 119,344	1919 .. .. . 131,566
1914 .. .. . 87,517	1920 .. .. . 82,530
1915 .. .. . 109,093	1921 .. .. . 113,980
1916 .. .. . 103,561	1922 .. .. . 66,193
1917 .. .. . 107,584	1924 .. .. . 79,783

It is difficult to forecast the future of an industry whose output is so inconstant. Much study is being given to its possibilities by

the Japanese who find it subject to many risks and attended with difficulties, foremost amongst which is the question of exchange. While the Japanese are inclined to look on the Chinese industry as most profitable, the hazards of exchange keep them from investing their capital in it. The menace of Chinese competition is therefore forcing the Japanese to give serious thought to the salvation of their own industry which will probably result in a stabilization of prices and a still further improvement in sericulture.

\* \* \*

## Building on Quicksand

Farmers Cannot Rely on European Markets, Says the Institute of Economics\*

"FOR the United States to plan its agricultural future on the assumption that Europe may be induced to buy large quantities of American foodstuffs at higher prices than now prevail would be to build on quicksand." This is the conclusion of the institute of economics, based on an exhaustive study of European needs, European purchasing power, and the competition offered by other food-producing countries. The study has been made by Dr. Edwin G. Nourse, a member of the council of the institute and president of the American farm economics association.

"The limited European market which now confronts the American farmer," says the institute, "is the result of conditions which were developing even before the war. About the turn of the century American agricultural exports began to decline, owing to a combination of influences. European countries were increasing their own production of foodstuffs, and the competition of Canada, South America, South Africa, and Australasia for the European markets was increasing. At the same time, the growth of our own domestic market was lessening our exportable surplus.

"The great war reversed this current for a time. Not only were the European demands for foodstuffs increased; but, in consequence of the shipping problem, the United States became the most available source of supply. In response to the increased demand and to the cry 'food will win the war,' food production was greatly increased. Prices were high and unprecedented prosperity came to our farmers, resulting in the disastrous land boom with which all are familiar.

"When the war ended, it was naively assumed that these war-time demands and war-time prices would continue indefinitely. Immediately following the armistice they did continue for a time, being made possible by additional extensions of credit. This piling up of debts to the United States, however, could not go on forever, and the inevitable collapse came in 1920.

"To-day," concludes the institute, "the pre-war trend of decreasing exports has been renewed in intensified form. Europe's agricultural production is being restored faster than her industry, and, consequently, than the buying power of her cities. And the competition of rival producing areas is keener than ever before. The whole economic tide is against an increase of European demands and high prices for American foodstuffs in the immediate future. The solution of the farmer's ills must therefore be sought in internal readjustments to a changed world situation."

\*Recent studies by the institute include "Germany's Capacity to Pay," "Sugar in Relation to the Tariff," "Miners' Wages and the Cost of Coal," and "Russian Debts and Russian Reconstruction."

\* \* \*

## Resale of the Canton Arsenal

AN interesting story comes from Canton concerning a protest lodged on May 31 with the American consul at that port against the proposed removal of the arsenal plant sold to the Canton government a few years ago and its resale to some North China *tuchun*. On June 1 the Canton government issued the following *communiqué* in explanation of its position:—

"A protest has been lodged with the American consul here against the removal of an arsenal plant, bought through the American firm of James Rabbitt, from Canton, and its sale for the manufacture of arms in North China. This plant is government property; it was sold to this government

(Continued on page 323.)





Japan's New Diet Building to be the Centre of a Group of New Structures to house the Foreign, Home, Education, Agriculture and Commerce and Navy Departments

## Japan's Reconstruction Program

**N**OTWITHSTANDING the huge imports of structural material into Japan the real work of reconstruction in that country has not yet started. The increase in the volume of importations of building materials following the catastrophe of last September came to an end with the removal of the temporary import duty on a long list of articles on April first. These materials were imported largely to meet the urgent requirements of housing, feeding and clothing the destitute people, an abnormal situation having no relation to the more important reconstruction program.

The real trade in reconstruction materials will begin after the commencement of permanent building operations in August. To carry out the comprehensive plans already drawn up for new buildings, streets, sewers, water and harbor works, transportation facilities, telephone systems and other improvements, huge quantities of materials will have to be imported. The work of devising plans for the rebuilding of a national capital on the ruins of an old city is not an easy one. The question of land readjustment and values is particularly difficult. The government proposes to pay for condemned land 90 per cent. of its appraised value, to be determined by a special committees



The Central Tower and Main Entrance to Japan's New Diet Building

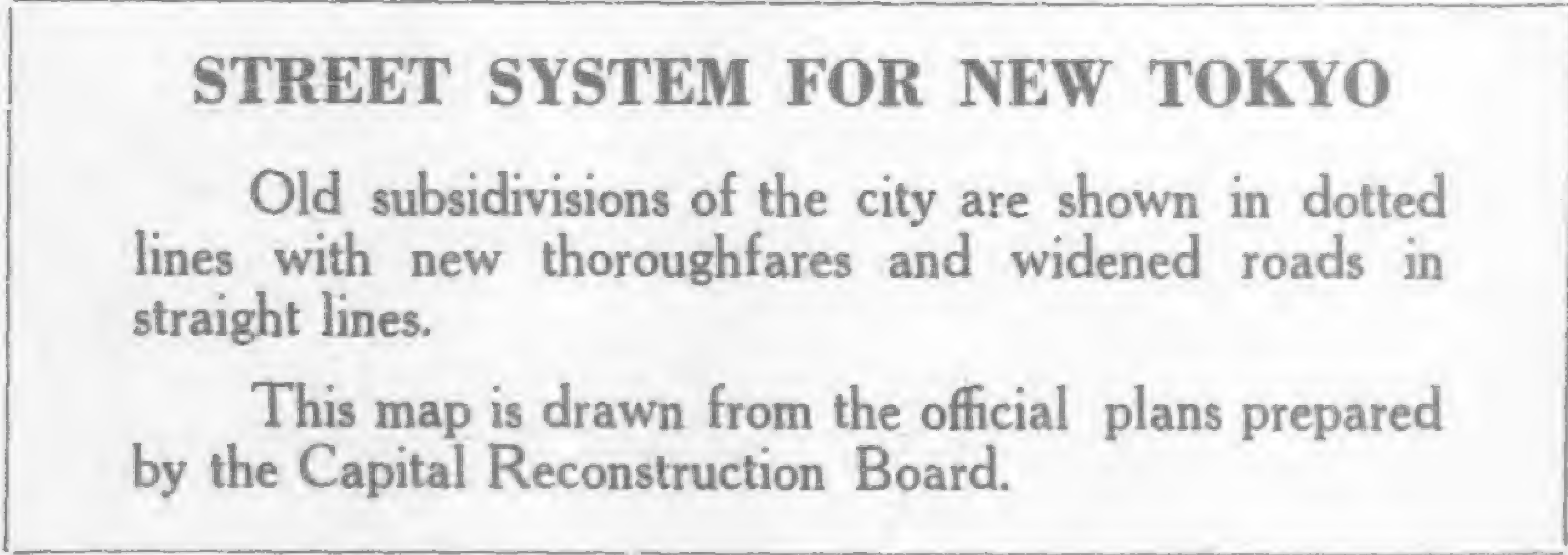
elected from each of the 66 districts in Tokyo. This in itself will occupy the best part of the present year. The work of reconstruction entailing the laying out of a complete new street system with provisions for new canals, underground elevated and surface tramlines, government administrative centres, parks, markets, fire zones, bridges, sewers and all the other complicated engineering features of a modern city calls for plans looking far into the future needs of the city. Only a small part of the actual survey work on these plans has been completed.

Most of the more important new building construction will be confined within a fire-proof zone which includes the Marunouchi, Kyobashi and Kanda districts.

Within this area the government proposes to subsidize the erection of fire-proof buildings to the extent of ¥.50 per *tsubo* of floor space, or one-half the additional expense over wooden construction. The costs of wooden buildings is estimated at ¥.200 per *tsubo*, while fire-proof construction is placed at ¥.300 per *tsubo*. This subsidy will undoubtedly be taken advantage of by the majority of building operators and provide a large market for high-class building materials and hardware.

The street building program is to be completed within five years







and all streets over 18 *ken* in width are to be paved. The character of the pavement, however, will not be decided upon until experiments have been carried out with asphalt, wood and stone blocks. It will probably be another six months before any actual paving work on the new program will be started.

The amount originally stipulated for the use of the reconstruction bureau was Y.700,000,000, but the diet in December reduced the budget to Y.464,000,000, but provided that the government would add to this Y.106,000,000 in case the municipal governments took over a certain proportion of the street building. This the municipal governments have since indicated their willingness to do. Two-thirds of the money for the purpose will be supplied by the government and the other third will be loaned the municipalities for 30 years, the first five years without interest.

Even then the reconstruction bureau's resources fell Y.105,000,000 short of its requirements. A supplementary budget for this amount was to have been presented to the diet by the Kiyoura cabinet, but the dissolution of the lower house on the first day of the session, January 31, occurred before any business had been transacted.

The current expenses of the reconstruction bureau have been paid this year from a fund authorized by the Kiyoura cabinet on its own responsibility. This amount, a little more than Y.2,000,000 will be deducted from the supplementary budget for the bureau's use which will be submitted to the diet in its next session. If the supplementary budget is approved, the bureau will have the use of practically the entire amount originally recommended for its use.

A recent special number of *The Japan Times* gave the latest official information on the details of the reconstruction program and we are indebted to this source for the map of the street plan and the interesting information which follows:

### New Street Plan

At first a sprawling village on the banks of the Sumida River; with numerous villages surrounding it. The city of Tokyo grew to its present size as one after another of these villages was absorbed, with its own street system, developing into a city with streets like a tangled spiderweb, rambling main roads, winding side streets and a hundred thousand narrow, crooked lanes and byways.

Cutting through this tangle, four broad thoroughfares are to be driven, from east to west and from north to south. One will cut through the heart of the city, starting from Yatsuyama, in Shinagawa, and passing through Shiba-guchi, on the east side of Shimbashi, will parallel the famous Ginza. Straight across the city to Ueno this thoroughfare will go past Edobashi and Kurumazaka, terminating at Minowa.

### Wide Thoroughfares

The width of this thoroughfare will vary in the various sections of its entire 13.470 metre length. The Shinagawa-Honshiba section of 3,360 metres will be 33 metres wide, increasing to 36 metres in the Honshiba-Shibaguchi section and to 44 metres where it traverses the main section of the city between Shibaguchi and Kurumazaka. From thence to the terminus the width drops back again to 33 metres.

The second main thoroughfare, one of 6,200 metres in length, will start from the foot of Kudan hill and run in a straight line to Ryogoku bridge, and from thence to Kameido. From Kudan to Jimbo-cho this road will be 33 metres wide, increasing by two metres between Jimbo-cho and the Sumida at Ryogoku bridge, with a lessened width of 27 metres in its distance on the lower side of the river.

A 33-metre street will run from Gofukubashi to the Eitai bridge, across the river and to Sunamura, a total distance of 5,250 metres.

### Hibiya to Tsukiji

The fourth main thoroughfare to be driven across the city starts at the northeast corner of Hibiya Park, to Sukiya-bashi and Owaricho, on the Ginza, and thence to the reclaimed land at Tsukishima. This is the shortest of the main roads, 2,270 metres, but it will be one of the most useful. From Hibiya to Kobikicho, the greater part of its length, this road will be 36 metres wide, decreasing to 33 metres in Tsukiji and from the site of the Honganji temple to its terminus the street narrows again to 27 metres.

A fifth road, of 33 metres for its entire length of more than 8,000 metres, starts at the Tsukiji Honganji temple, connecting the main

street from Hibiya with the main Shinagawa-Minowa street. This road will traverse the busy section along the Sumida through Kayaba-cho, Hama-cho 3-chome and, turning to the north, will pass the west side of Asakusa Park and meet the Shinagawa thoroughfare at Kanasugi Shitamachi.

### Uyeno to Oshiage

The sixth new street for main traffic starts from Uyeno Park and cuts the Shinagawa thoroughfare at Kurumazaka, proceeding thence to the Sumida, which it strikes in line to be driven to the electric car station of the Keisei line at Oshiage. This road, of a width from end to end of 33 metres, will have a total length of 3,064 metres.

These six are to be the main streets of the new city, supplementing the former main thoroughfares. In addition, less important new streets to the number of 122 are to be on the new map, these new streets to have a minimum width of eleven metres.

### Tokyo Harbor

Tokyo's heretofore neglected harbor is to be improved and made available for ocean-going vessels, at an estimated cost of Y.28,700,000, and connecting all points throughout a large part of the city with the harbor there is to be created an enlarged barge-canal system. With the completion of this work, freights in and out of Tokyo can be handled at a minimum cost, with cheap water transportation from steamer to warehouse.

The plans for the improvement of the harbor have not been fully worked out, and their execution will not be completed for five years.

Roughly, the plan is to dredge the mouth of the Sumida to a minimum low-tide depth of between six and a half and seven metres, with a retaining wall of the same depth. From the mouth of the river to a point near Daiba a 7-metre canal will be dredged, permitting the passage of ships up to 3,000 tons, while at Daiba dredging and reclamation work will provide room for docks and warehouses. From the Daiba reclaimed ground a breakwater with a total length of 3,750 metres will be built, while the retaining wall along which ships will tie up, will have a water depth of 7 metres for 1,800 metres and of 6½ metres for the remaining 270 metres of its length.

Off the present Omori flats, an area of 1,090,000 *tsubo* will be reclaimed, to provide ground for a great freight depôt.

### Tokyo-Yokohama Canal

A plan, still further in the future, is the dredging of a barge canal to connect Tokyo and Yokohama, to be completed by 1929. The estimated cost of this new waterway is Y.17,800,000. The route practically parallels the beach line, with one terminus in Yokohama harbor and the other in the Sumida River at Shinagawa.

Its length will be 17,000 metres, with a width of 200 metres, and a minimum depth of 3½ metres.

### Yokohama Harbor Works

Over two million yen has already been spent on reconstruction work in Yokohama harbor and the port has once again normal facilities. Four quays have been reconstructed; the breakwater, which sank at places below the water level, has been repaired, and steady work is under way to complete two more quays immediately and the rest, seven in all, by the end of March, next year.

A total appropriation of Y.4,843,961 has been made available for this work, and, if this should prove insufficient, a further expenditure is to be authorized at the forthcoming session of the imperial diet. The necessity not only of reconstructing this most important harbor but of increasing its capacity and facilities is fully recognized.

The first appropriation for harbor work was for Y.2,500,000, to cover the repairs of the wrecked No. 1 and No. 2 quays and the restoration of Nos. 4, 9, 10 and 11. The item also covered the extension of the foundations of No. 5 and the repairs to the breakwater.

For the present fiscal year, Y.2,087,190 has already been expended, while work to be carried on between now and the end of August calls for the expenditure of an estimated Y.4,411,585.

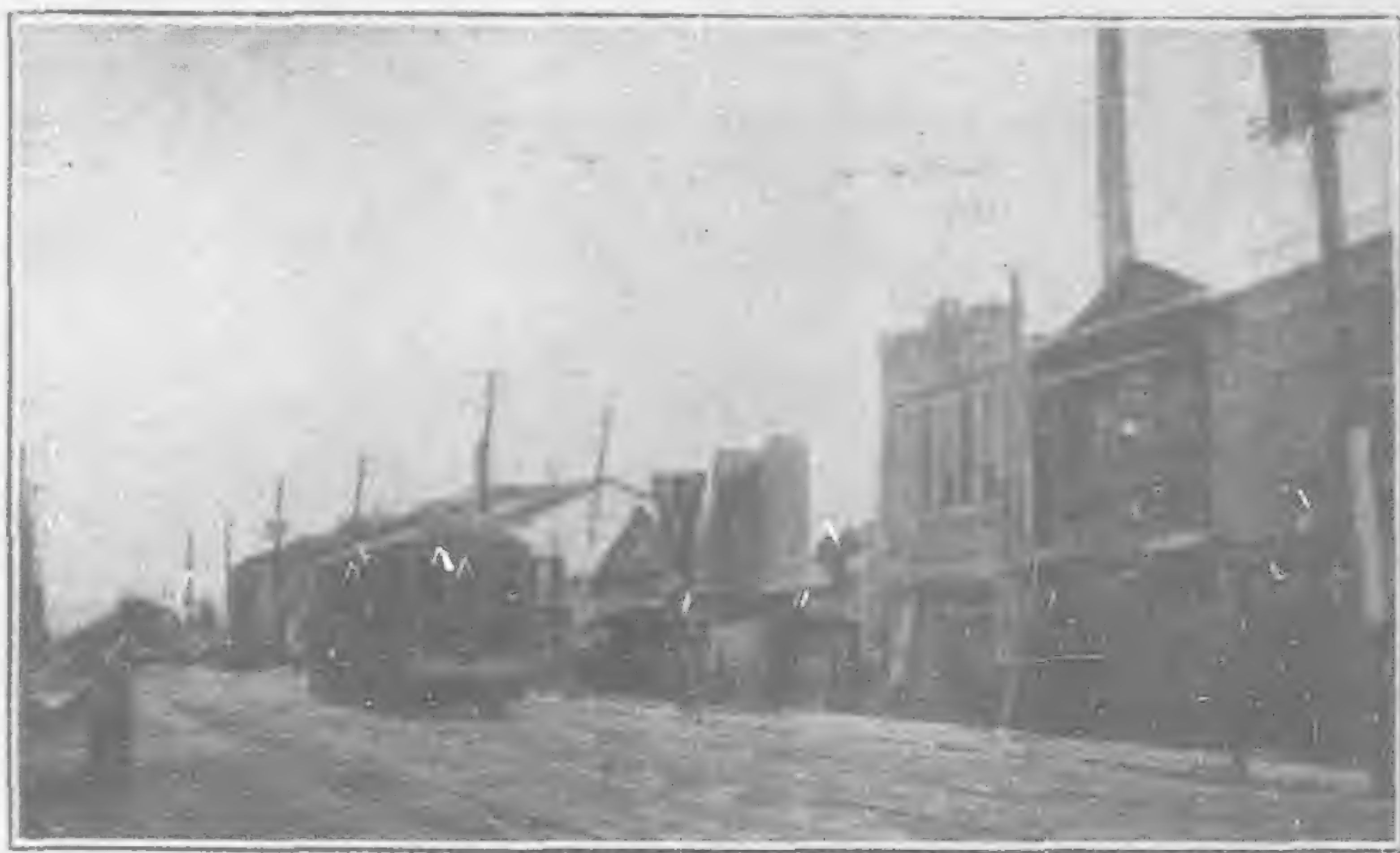
Quays No. 9, 10 and 11, as repaired, are solidier than before the bottom dropped out of things in the quake, while each has been lengthened 48 feet seaward. Nos. 4 and 7, while left the same length as before, have been materially strengthened.

Quays Nos. 3, 5 and 8 are so badly shattered as to require complete rebuilding, and this is the part of the reconstruction work that will take until late next year to complete.









Typical Temporary Structures in Tokyo Built After the Earthquake

### Tokyo Canal System

Tokyo, a city of waterways, will in the course of its reconstruction greatly elaborate and improve these important means of city communication. One who has paid no particular attention to the traffic on Tokyo canals will be surprised at the enormous quantity of goods transported by canal boats.

With the proposed harbor construction of Tokyo and the new canal projected between Tokyo and Yokohama, the Tokyo waterways system which has always been inadequate will be improved by the construction of a new canal commencing from the bay at the north side of the Shiba detached palace and extending to Shimbashi, passing to the north-west of the Shiodome railway freight station. At Shimbashi it will join the present canal which will be enlarged to a width of 33 metres throughout as far as Kabutobashi near the site of the Tokyo exchange.

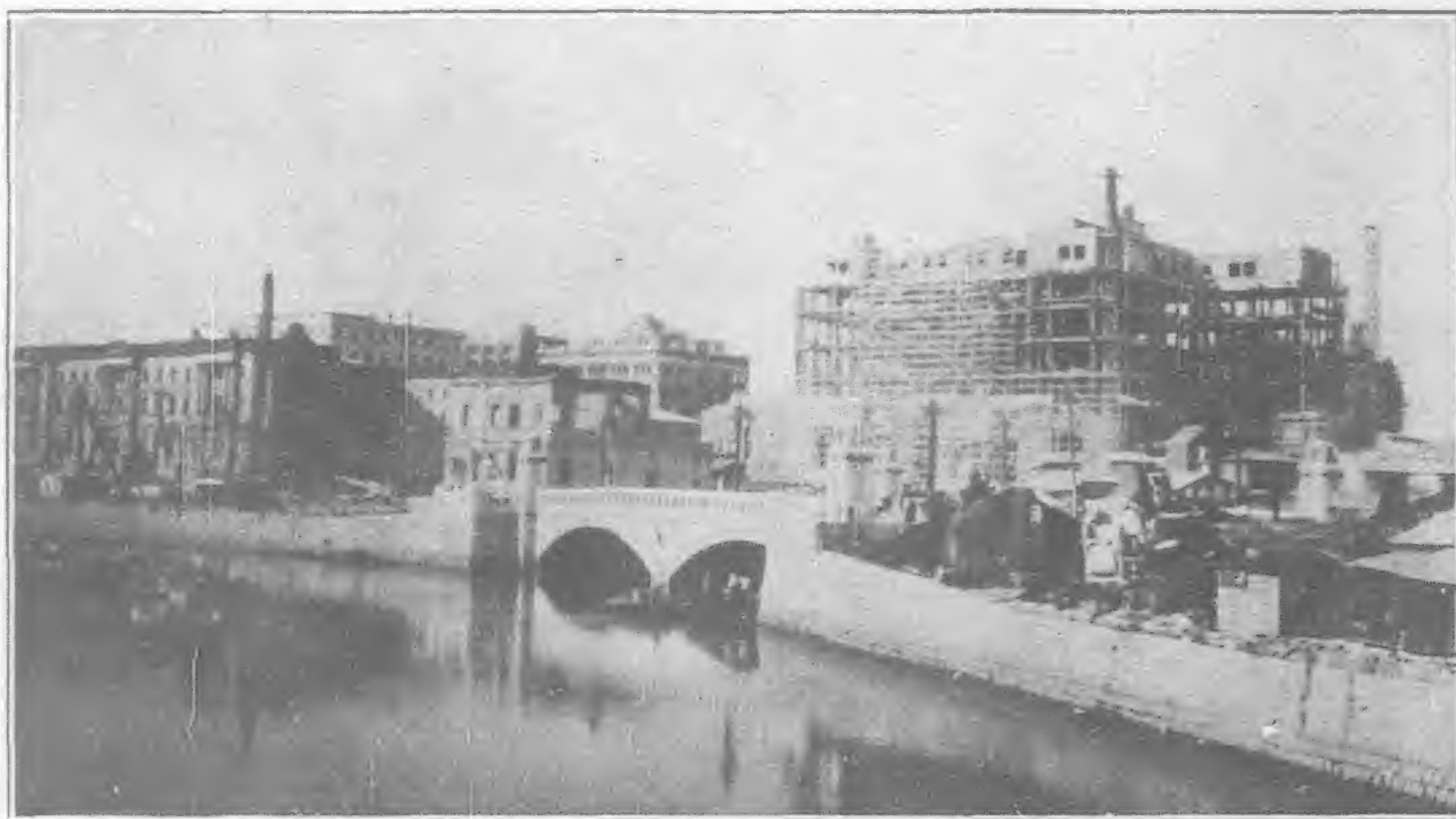
A second canal will be constructed from the Shiba detached palace to run through the east portion of the city to the mouth of the Sumida River. From a point on the Sumida near the Tokyo

bay steamship office location a canal of 33 metres wide will be constructed extending to Yurakubashi. A canal 47 metres wide will extend from Eltaibashi via Reiganbashi to join the present canal near the bank of Japan. A canal 40 metres wide will be constructed starting at the west end of Etchujima to run eastward as far as Susaki.

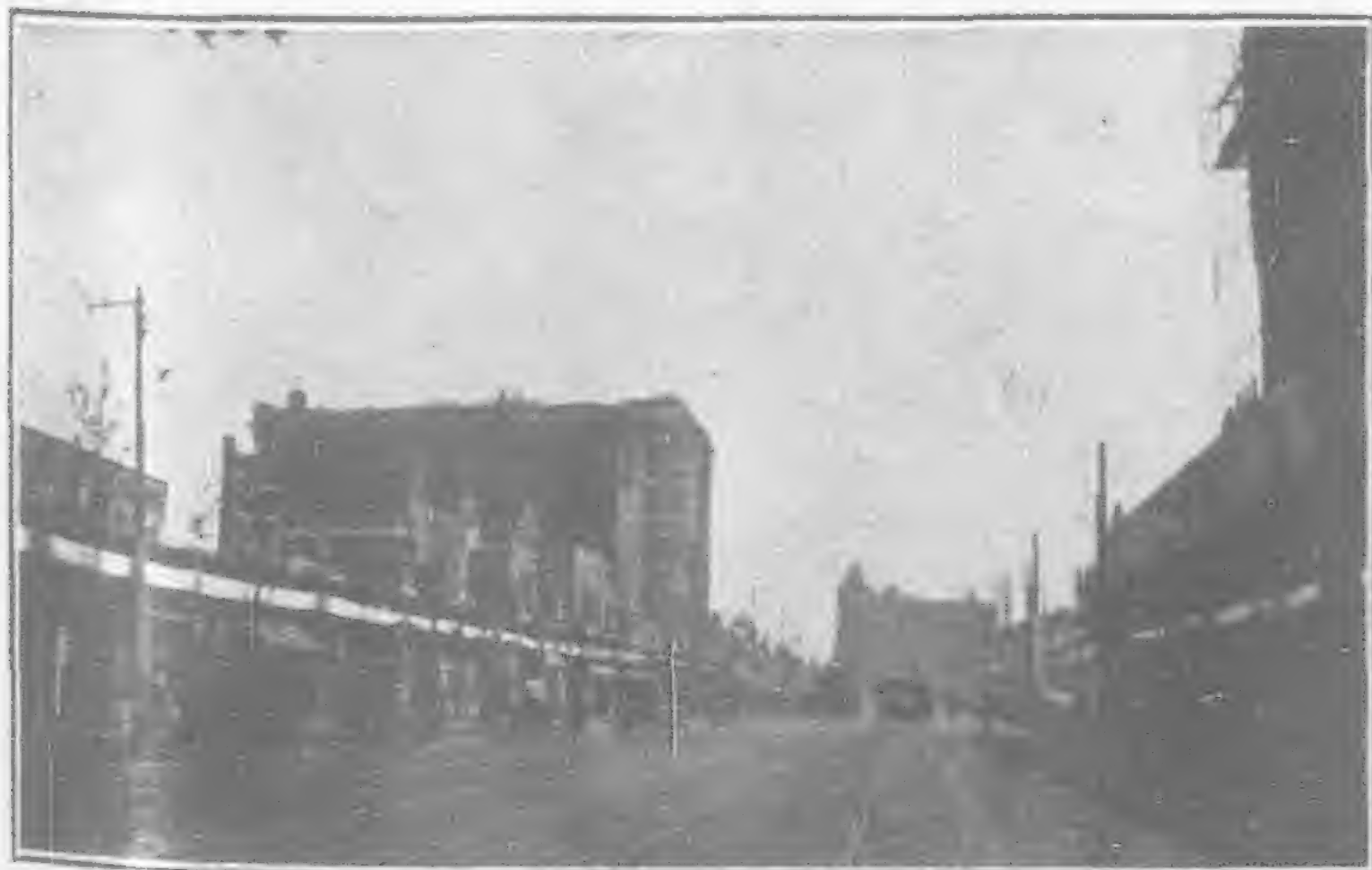
The widest canal, 55 metres wide, will be built from the Sumida River near the place occupied by the Asano Cement Company to Oshima in Tokyo-fu. Another new canal 40 metres wide is to extend from Sunamura in Susaki to Yanagishimabashi near Keisei electric car station at Oshiage. The eighth new canal will be 47 metres wide extending from Ryogokubashi to Manseibashi. All of these new canals as well as the repaired old canals will have a water

depth sufficient for the floating of vessels from 100 to 150 tons displacement. The banks will be so constructed as to allow the erection of large warehouses close to the water.

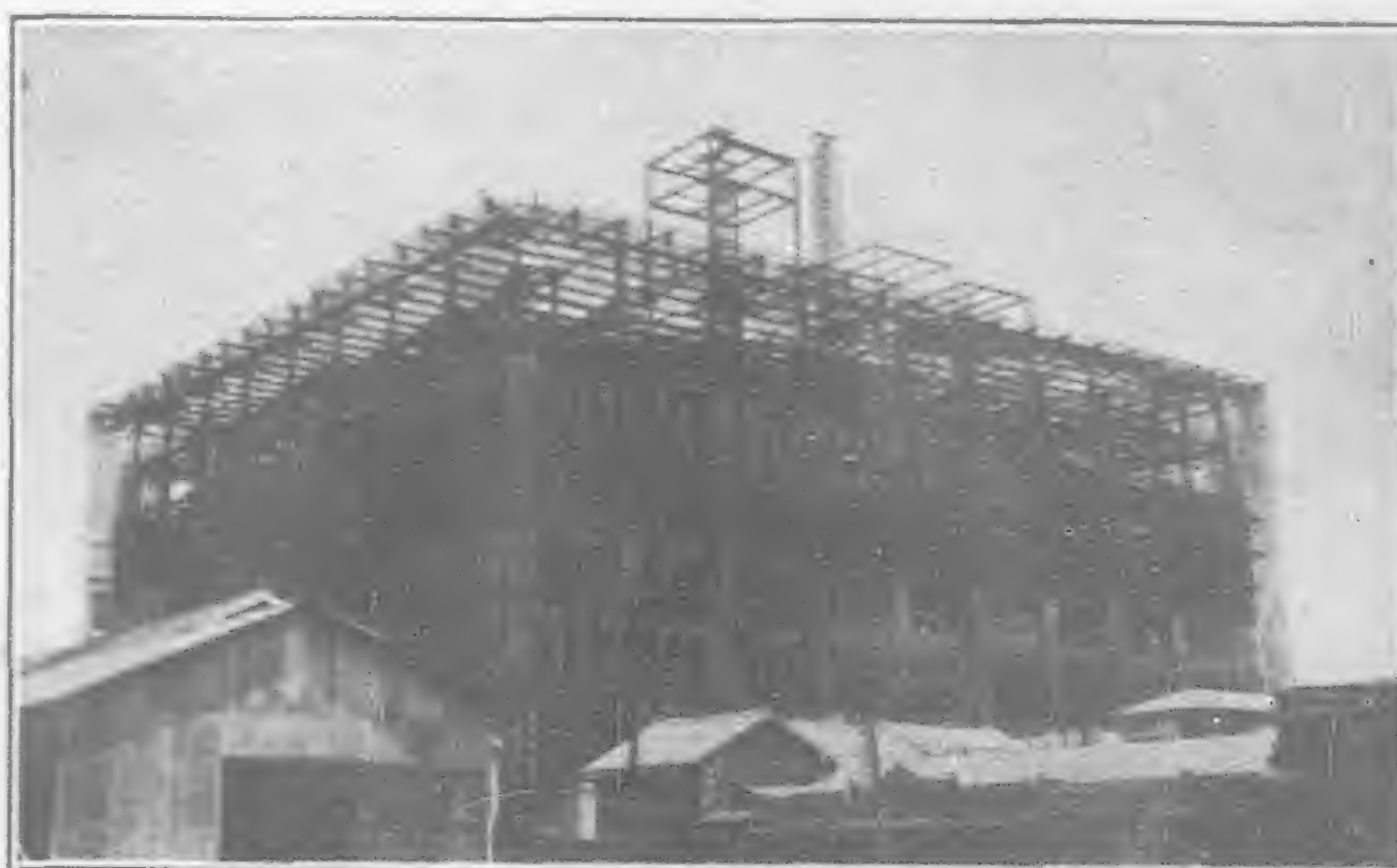
The entire waterways scheme requires an expenditure of Y.30,000,000.



Building Progress in the Heart of Tokyo's Financial District: Bank of Japan on the left. In the centre will arise the new Mitsui Buildings.



The Ginza, Rebuilt with Temporary Shops



New Steel Building in Course of Erection in Tokyo



### New Bridges

The September disaster showed the necessity of more bridges spanning Tokyo's numerous canals, as well as the importance of having their structure fireproof. The bureau of reconstruction has decided on an ambitious program, necessitating the expenditure of nearly Y.80,000,000 for the construction of 218 new bridges of which 118 are to be constructed under the supervision of the board and the remaining 100 under the direction of the municipal government. The four bridges spanning the Sumida River, Azumabashi, Aioibashi, Ryogokubashi and Eitaibashi are to undergo such repairs and improvements as to render them safe under any circumstances.

The following new bridges have already been decided on to start the bridge building campaign: *Yamanoshiku bridge*, 145 metres long and 22 metres wide, to span the Sumida River near the point where the Takeya ferry is located at Mukojima. It is part of the new Sumida Park project.

*Komagata bridge*, 150 metres long and 33 metres wide, to span the Sumida half way between the present Azuma and Umayabashi bridges.

*Kuramae bridge*, 160 metres long and 27 metres wide, to span the Sumida half way between Umayabashi and Ryogokubashi, serving as an integral part of the new highway between Kameido and Honjo. It will be used both as a vehicle and a tramway bridge.

*Nakasu bridge*, 182 metres long and 22 metres wide, to span the Sumida half way between Shinohashi and Eitaibashi as a part of the new road from the present site of the Asano Cement Company to Nakasucho. This bridge will be the longest in Tokyo. Many of the present bridges are to be widened to conform with the new wide streets planned for Tokyo.

### Sewer System

Plans are being prepared for a sewage system comparable with the best anywhere in the world. The new system had already been begun in Shitaya and Asakusa before the earthquake. The installation in Nihombashi, Kyobashi, Marunouchi, Kojimachi and Shiba will be completed in 1927. The total appropriation for this work is Y.43,500,000. In addition, Y.950,000 has been appropriated for general improvement of sanitation. This amount is to provide facilities for the disposal of garbage and similar purposes. The improvement and extension of the water supply system will cost Y.100,000,000.

### Transportation Systems

Transportation within the new capital is a problem occupying many minds, the surface trams and the elevated lines having long been inadequate to meet the congestion at the rush hours. Transportation by an underground system has been much discussed, until at the present time three corporations are in the field, with ground to be turned by one or more of them within a short time.

Foreign, as well as many Japanese engineers, have taken borings all over the city and planned systems that are believed feasible in construction. Has it not been for the earthquake and the consequent loss of hundreds of millions, the work upon a subway system would have already been going on, but the plan has been checked, not stopped.

### Present Tram Lines

There are at present 190 miles of surface tram lines in Tokyo. Under the new system, 16 miles of this will be abandoned and 197 miles more built, providing a system with a total trackage of 371 miles. In the new city, all roads with a width of 22 metres will be traversed with tram lines.

The railway lines in and out of Tokyo are all to be electrified, work upon the proposed change having been already well under way at the time of the earthquake. At present the electric line extends as far as Yokohama only, but work well on the way towards Yokosuka, via Ofuna, has been done with the intention of extending the electric service on the main line as far as Kozu by 1925.

### Two Belt Lines

The lines within the city are to be completed, with both an inner and an outer circle. By the inner route, connecting Ueno and Kanda stations, direct transfers from the Tokaido and Tohoku main lines will be possible. There are at present two tracks for trains and two tracks for electric cars between Shinagawa and Tokyo central. These tracks will be increased by an addition of another two lines for both uses while Ueno station will be enlarged. When

this is done, then there will be a thorough line connecting Kyushu with Hokkaido which forms the spinal line of the imperial railway from the southern end to the northern terminal of the empire.

On the other hand, there will be two tracks each for electric passenger cars and freight trains on the present Yamanote line. All freight from Hokkaido for Tokaido and *vice versa* will be transported through this elevated line. Tabata station in the line will become a transmitting points.

Under the new system of transportation, the present Tabata station on the Yamanote line will become a very important station as the termini of the Tokaido line while the Shinagawa station will be that for the Tohoku line.

The total expenditures for these improvements are figured at Y.22,000,000.

### Automobiles Increases

The earthquake and lessened transportation brought an immediate demand for motor transport, with the result that a big increase in the number of automobiles has been recorded. Machines for freight and for hire at the end of August, 1923, numbered in Tokyo, for freight 488; for hire 1,638. These public vehicles had increased by March 31, in spite of the many lost, to 754 for freight and 2,621 for passengers. Private machines have increased by nearly three thousand, the figures being: private lorries and trucks before the quake 995; by the end of March last 1,736; private passenger cars before the quake 1,957; by the end of March 2,641.

### Government Buildings

There will be a number of conspicuous changes in the New Tokyo that never would have been possible except for the opportunity the enforced rebuilding has given. One of the alterations that will bring the capital closer in line in appearance and convenience with those of other lands will be a grouping of the main national administration buildings, around the handsome new diet building, now well along in course of construction.

### Administration Centre

Kasumigaseki will become the governmental centre. Here the towers of the diet building will mark the centre of a group of modern, handsome structures to house the departments of foreign affairs, finance, home affairs, education, agriculture and commerce, and navy all now, with the exception of the foreign office and navy department scattered in various parts of the city.

From the present site of the department of finance, an avenue 55 metres wide will run straight to the main entrance of the sites of what are now the garrison hospital and the bureau of aviation, to be run from a point near the British embassy and connecting with the main avenue.

### Broad Parks

There will be broad park spaces throughout this district and the new structures will be built in relation to each other, to form one harmonious whole.

The new homes for the departments of home affairs, education, finance and agriculture and commerce will stand in the rear of what is now the department of home affairs.

A new building for the department of railways will be erected in front of the Tokyo central station, near the spot now marked by the Mayeshima statue.

### Tokyo Station

Another of the conspicuous changes will be in the extension of the space included within the grounds of the Tokyo central railway station, which is to be doubled so as to include all the area now occupied as a site by the municipal offices.

A second main entrance for the station on the Ginza side is to be created, and from this entrance a new street will run to the 44-metre thoroughfare near Nihombashi.

The planned improvements in and around the main railway station, to be completed by 1928, will cost Y.5,000,000.

### New Schools

Several very handsome school buildings are included in the reconstruction plans of the department. New homes for the first high school and the agricultural college of the imperial university will go up, exchanging their old sites.

University of commerce building will be built at Nerima-mura, near Itabashi, in the northern suburb, while the new Tokyo higher



technical school is to be at Sensoku-maru, near Osaki, beyond Shinagawa.

The old site of the girls' higher normal school is to be used for the foreign language school, but the selection of a new site for the normal has yet to be done.

The many primary schools destroyed will all be rebuilt on their old sites, but the buildings will be both large and designed in more modern ways.

### Larger Markets

A central wholesale market is to go up at Tsukiji 4-chome, to cover 90,000 *tsubo* of ground, while a new vegetable market is planned for Sakuma-cho, Kanda, to cover 10,000 *tsubo*.

The main fish market will be located at Tsukiji, to be connected with the main railway system by a spur, while the dredging of the Sumida and the new harbor work will connect the market directly by water with all the main sources of supply.

### Central Postoffices

A new big building for the Tokyo central postoffice, which is now housed in a one-story barrack opposite Tokyo station, is to be constructed at a cost of ¥6,000,000. The new building, for which plans have already been made, will be five storied and be modeled after the London postoffice and the Chicago postoffice, which are among the most modern postoffices in the world. It is expected that the construction of the postoffice will require five years, and the building upon completion will be counted as one of the finest buildings in Tokyo.

### New City Plan

In the plans for a new Tokyo, a segregation of industrial, business and residential sections is to be carried out, with types of buildings for each specified in the new building ordinance. A fairly complete park system, more breathing spaces for the population, playgrounds for the children and spots of safety from fires have been planned. Never again, if the city planners can prevent it, will there be enacted in Japan such a tragedy as took place in Honjo on September 1, when forty thousand men, women and children found themselves hemmed in by flames, trapped inexorably and with death the easiest and only way out.

### Factories and Business

The factory section where the manufacturing plants will be concentrated, will be in the Honjo and Fukagawa wards east of the Sumida River.

The main business section—although there will be hundreds of smaller centres throughout the city, to serve the people—will be located in the area bounded on the east by the Sumida River, on the west by the grounds of the imperial palace, on the south-west by Iigura and on the northwest by a line drawn from Kudan to Iida-bashi, extending to Ueno park, with the remaining north side extending to the limits of Asakusa ward.

The residential section, within which very many kinds of manufacturing and business will be strictly prohibited, will include all the Yamate, or high ground, and in those other sections of the city not included within the limits of the factory and business sections.

### Many New Parks

All the old parks in Tokyo will be restored to their original condition as soon as it is possible to remove from them the many thousands of refugees, now living in temporary barracks, rushed up immediately after the fire.

In addition, the home department will co-operate with the municipality in increasing the number of parks, the location of the following having been decided upon already, with others to be set aside later:—

Kinshi-cho park, in Honjo, to occupy the site of the former Honjo provision and fodder warehouse;

Sumida park, to take in the river frontage in the Mukojima section;

Hifuku-sho park, the site of the former army clothing depot, Honjo, the scene of the awful tragedy referred to above.

Fifty-two small parks in various sections of the city, near schoolhouses.

The parks being planned in addition to these are six, as follows: Shitaya Takecho park, Fukagawa park, Kojimachi park (at Sanno); Koishikawa park, on the site of the old arsenal, and the Shiba park, on the site of the former imperial detached palace.

Three of these, the one in Shiba, the one on the Sumida and the one on the old arsenal site will be large and laid out elaborately.

### Automatic Telephones

Out of a total 84,000 telephone subscribers, last August, there are now in service 28,000. This number will soon be increased to 64,000, when the Asakusa, Ginza, Hamacho and Sumida exchanges are restored. Fourteen of the eighteen exchanges in the capital were destroyed by the fire.

Half the new system is to consist of automatic telephone equipment, for which 50,000 automatic instruments have been ordered from England. The entire system eventually is to be equipped with instruments of the automatic type and their use extended to Yokohama next year. There were 10,000 telephones in the port city before the earthquake and 2,500 are operating now.

### Resale of the Canton Arsenal

(Continued from page 316.)

by the said American firm for \$1,600,000, and \$1,200,000 has been paid, leaving a balance of about \$400,000.

"The arrangement was that the plant should remain in a warehouse pending payment of the balance and charges.

"The American vendors, unwilling to continue this arrangement, have contracted to resell this plant through a Japanese intermediary, without notification to this government nor even arranging for repayment of the money already paid.

"A Japanese steamer is now in Canton with specially recruited laborers from Manila (Canton laborers having refused to handle the cargo) who have begun preparations to load the plant for shipment northward.

"The United States being a party to the arms embargo agreement, it is an interesting question whether the removal of the plant from Canton and its resale to other parties in China would not constitute a breach of the agreement by America, *vis-à-vis* the other signatories. On the other hand, the retention of the plant in Canton could not be so construed, since the United States was not a party to the agreement when the plant was actually imported into Canton."

If the facts disclosed in the *communiqué* are true it would appear that the machinery never left the legal possession of the American firm, that all this time it has retained ownership over a very valuable munitions plant in China at a time when its government has placed an embargo on the export of arms to this country. According to the *communiqué*, the United States was not a party to the international arms agreement when the plant was actually imported into China, but the American authorities must have known that the arsenal was being held in the warehouse as American property awaiting full payment before being turned over to the Chinese purchaser. The Canton government having paid to date seventy-five per cent. of the purchase price has a very reasonable complaint if the munitions plant is now taken out of the bonded warehouse and sold to its enemies.

### Tientsin Water Supply

(Continued from page 342)

The pumping machinery consists of high-lift and river water pumps, steam and electrically driven. The high-lift pumps are five units of Tangeye's treble ram steam pumps and two units of Sulzer centrifugal pumps coupled direct to electric motors. The river water pumps are even units of steam-driven centrifugal pumps, and two electrically-driven centrifugal pumps. Four of the steam pumps are at the Yu-ho end of the pipe line and three at the end of the Hsi-ho line. Boilers are three Babcock and Wilcox, three Cochrane and five locomotive. The pumping machinery develops a pressure of 150 feet.

The present water tower has a capacity of 100,000 gallons and gives a pressure of 110 feet. Another tower of 200,000 gallons is under course of construction. Water is taken from the Yu-ho and Hsi-ho through long intake pipes, pumping machinery being placed at the river end. Water is thus obtained from streams above the Chinese city and concessions, it being therefore, freer of drainage matter than water that has passed by this area, although just as full of suspended soil. The company has not deemed it expedient to explore the possibilities of artesian wells and has no intention to experiment while it can still obtain its present excellent supply. It is felt almost impossible to obtain anywhere near the demand from artesian borings, however satisfactory they may prove. The price of water to individual consumers is 70 cents a thousand gallons.





Ogaki Factory of Dai Nihon Boseki K.K.

# Japan's Textile Industries

## 1.—Cotton Spinning and Weaving

By E. Kusano

**T**HE recent activity noted in Japan's cotton yarn and textiles exportation to China, Hongkong, India and even to Mediterranean ports, induced mainly by the depreciation of the yen, has mitigated to a great extent the adverse trade balance of the empire.

Especially is this noted in cotton textiles, the exportation of which has been steadily increasing in recent years, and has become next to raw silk in its importance as an export commodity of Japan. The output of the Japanese cotton spinning and weaving mills in the Kanto districts was seriously impaired as a result of the earthquake but thanks to speedy reconstruction work, the manufacturing capacity has been restored to a large degree.

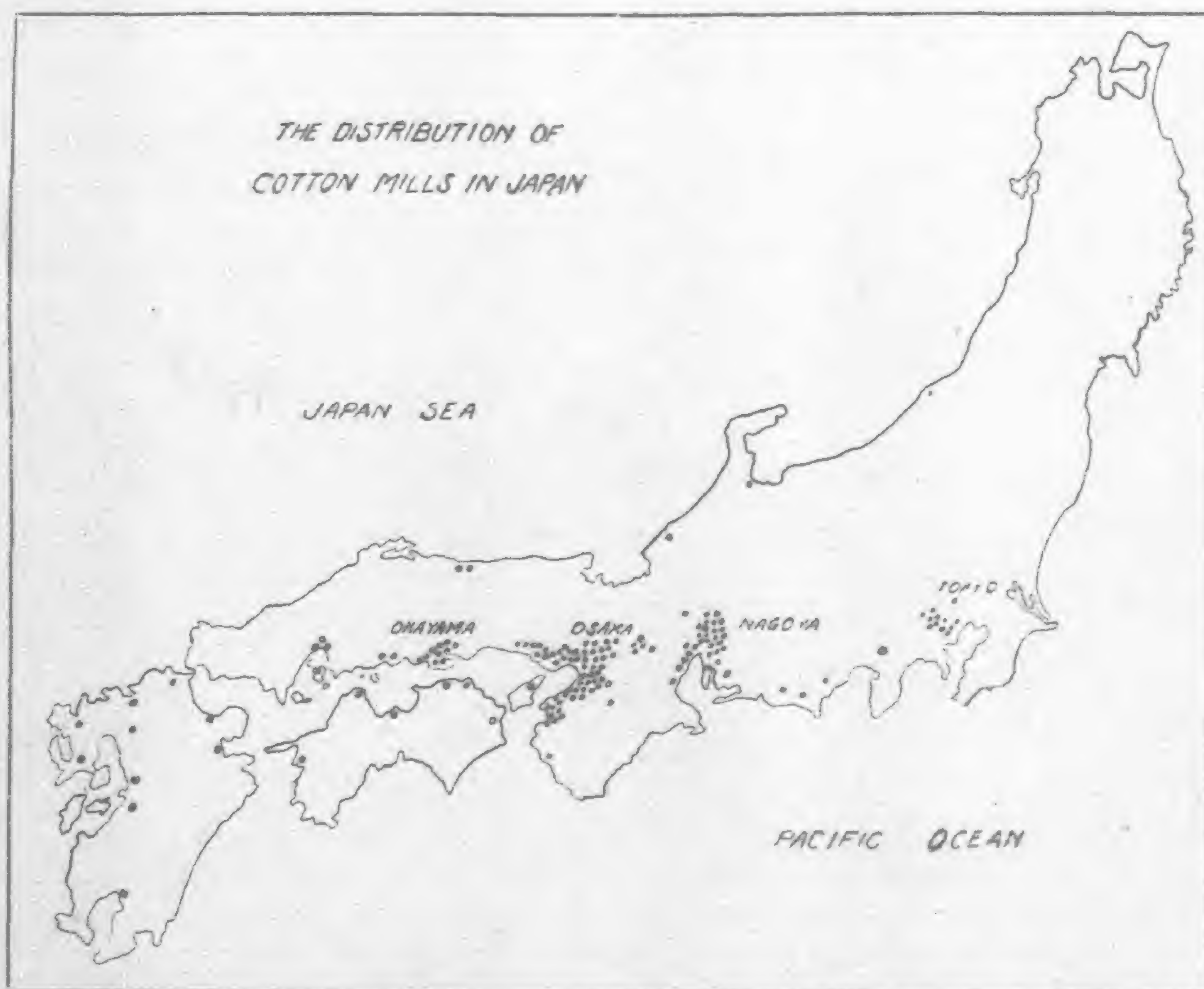
The cotton yarn and weaving industry in Japan was one of the few which survived the reactional panic after the European war. The Kanegafuchi Cotton Spinning Company, for instance, has maintained its semi-annual 70 per cent. dividends until the first half of 1923; the company, then reduced its dividend rate to 60 per cent., for the last half of 1923, because of the quake. The other spinning and weaving companies, with few exceptions,

enjoyed good business conditions and were not affected by the general financial post-war inactivity. Accordingly they have been extending their capacity with great rapidity, as will be seen in a following table.

Despite the extensive damage caused by the quake, there were 70 cotton spinning and weaving companies, including 60 members of the Japan cotton spinners' association, and 10 outsiders, at the end of December, 1923, according to a report just published by the association. The aggregate total of the authorized capital of

these 70 companies amounted to Y.530,277,650 and of this Y.372,272,935 was paid up, the reserves reaching Y.217,407,890. The number of spinning and weaving mills stood at 241, of which 228 belonged to the members of the association; operating 4,422,428 ring spindles, 14,370 mules; and 510,031 doubling spindles. Of these the members of the cotton spinners' association operated 4,183,596 ring, 14,370 mules and 501,031 doubling spindles, leaving 238,832 ring and 9,000 doubling spindles operated by non-members. There were 64,460 looms in operation, of which 61,421 belonged to the members of the association.

Compared with pre-earthquake conditions



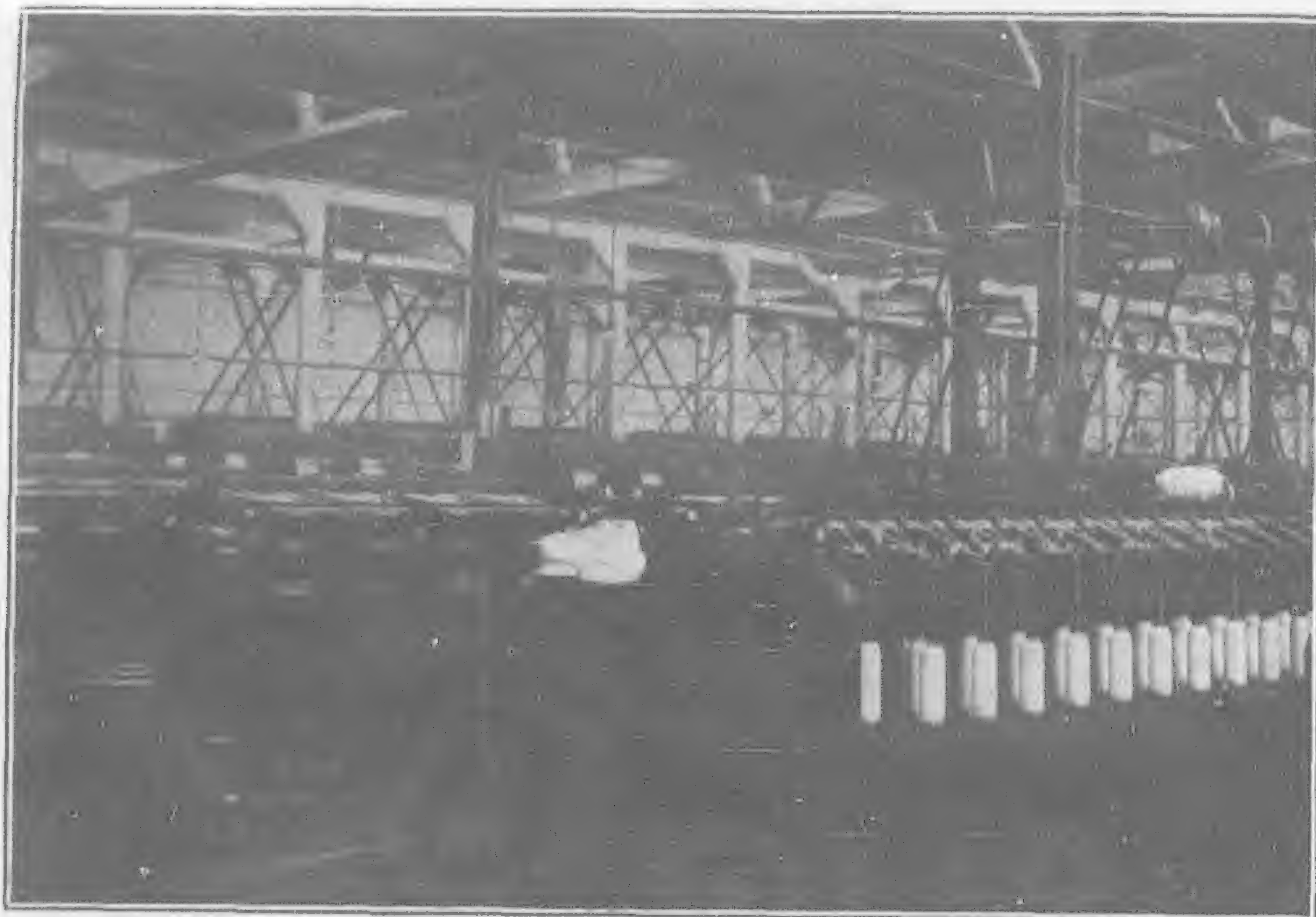


# The Ogaki Factory of the Dai Nihon Boseki K.K. (Japan Cotton Spinning Company)

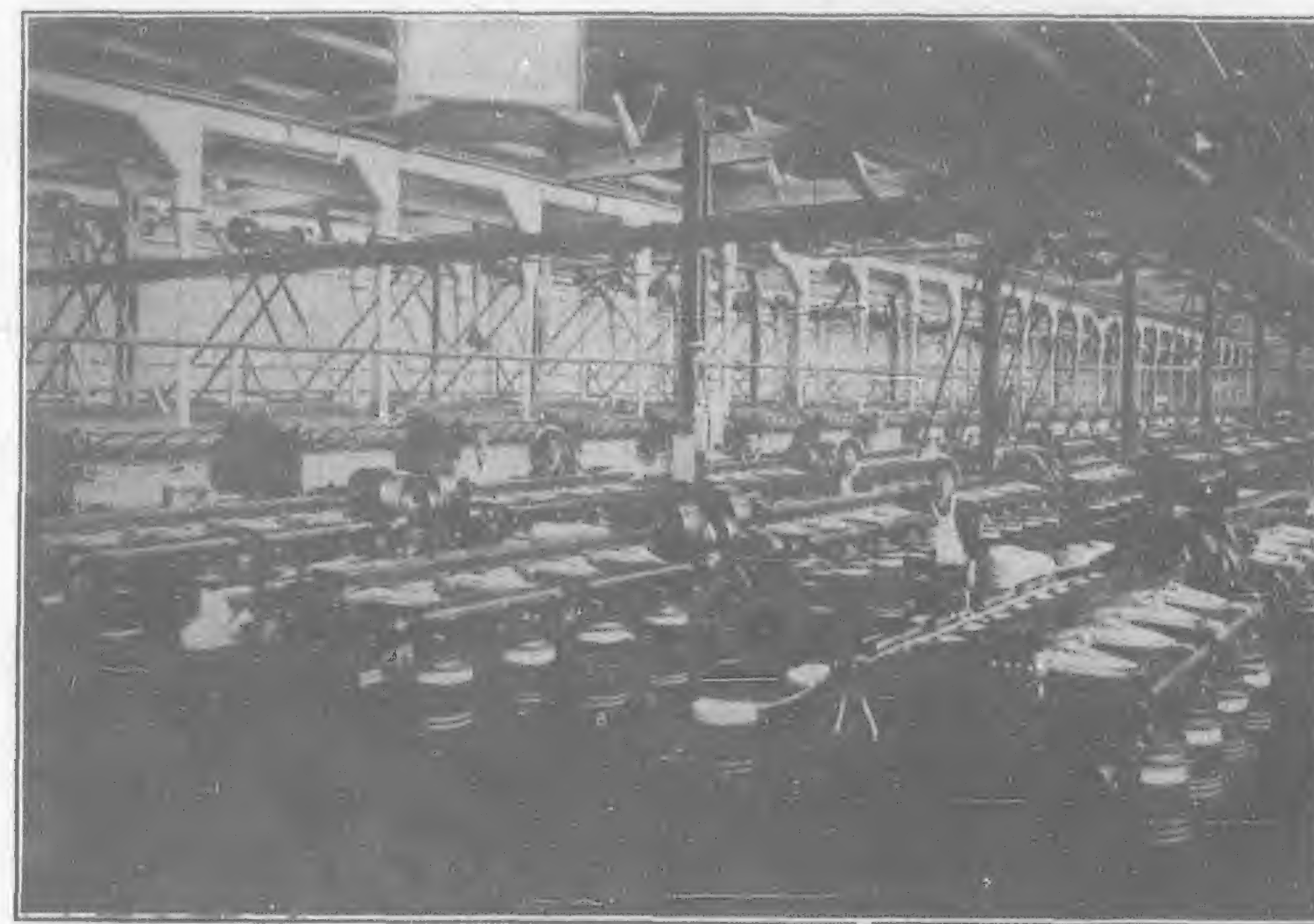
July, 1924

THE FAR EASTERN REVIEW

325



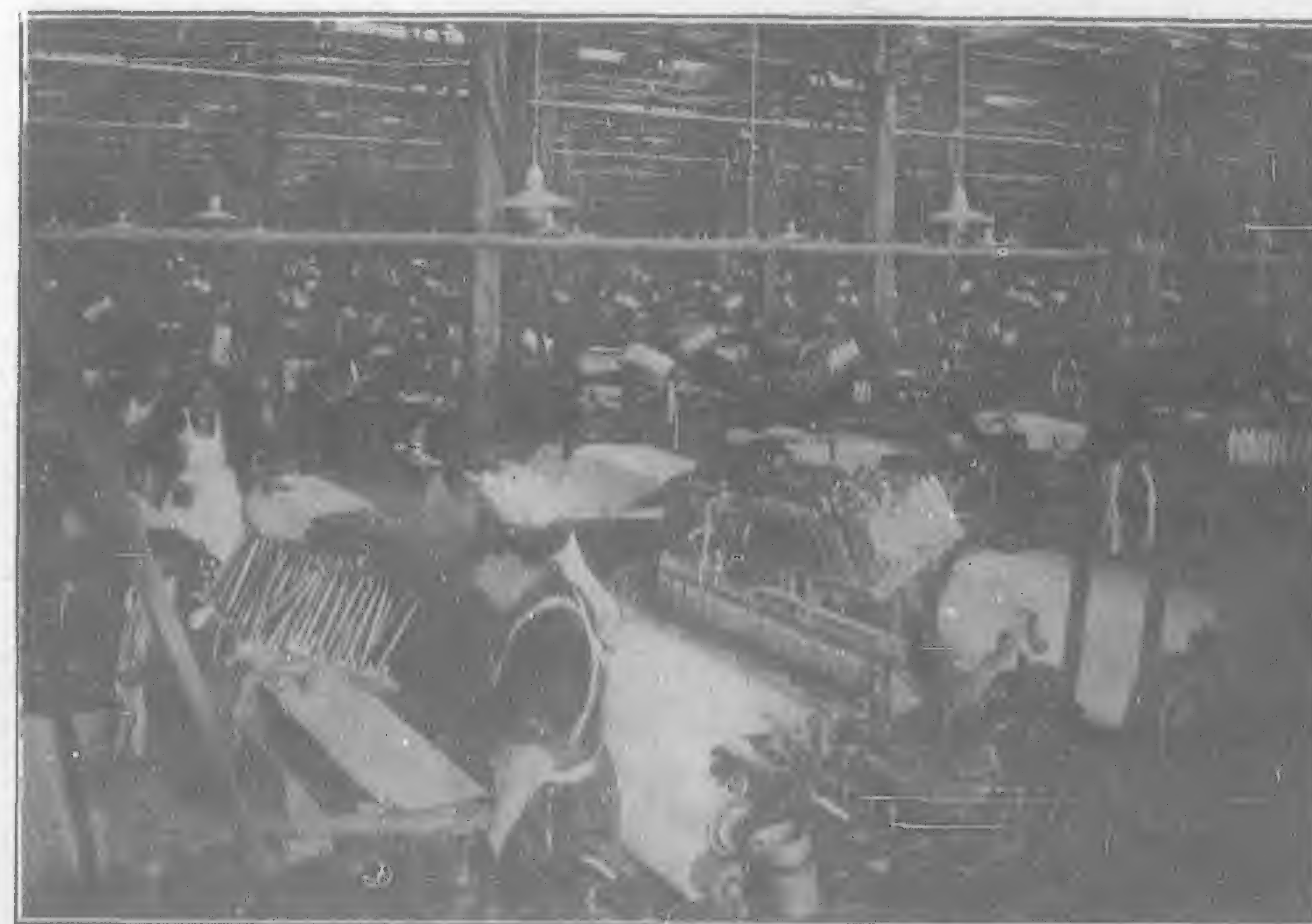
Slubbing Room



Platt Bros. & Co., Ltd. Carding Machines



Packing and Baling Yarn for Export

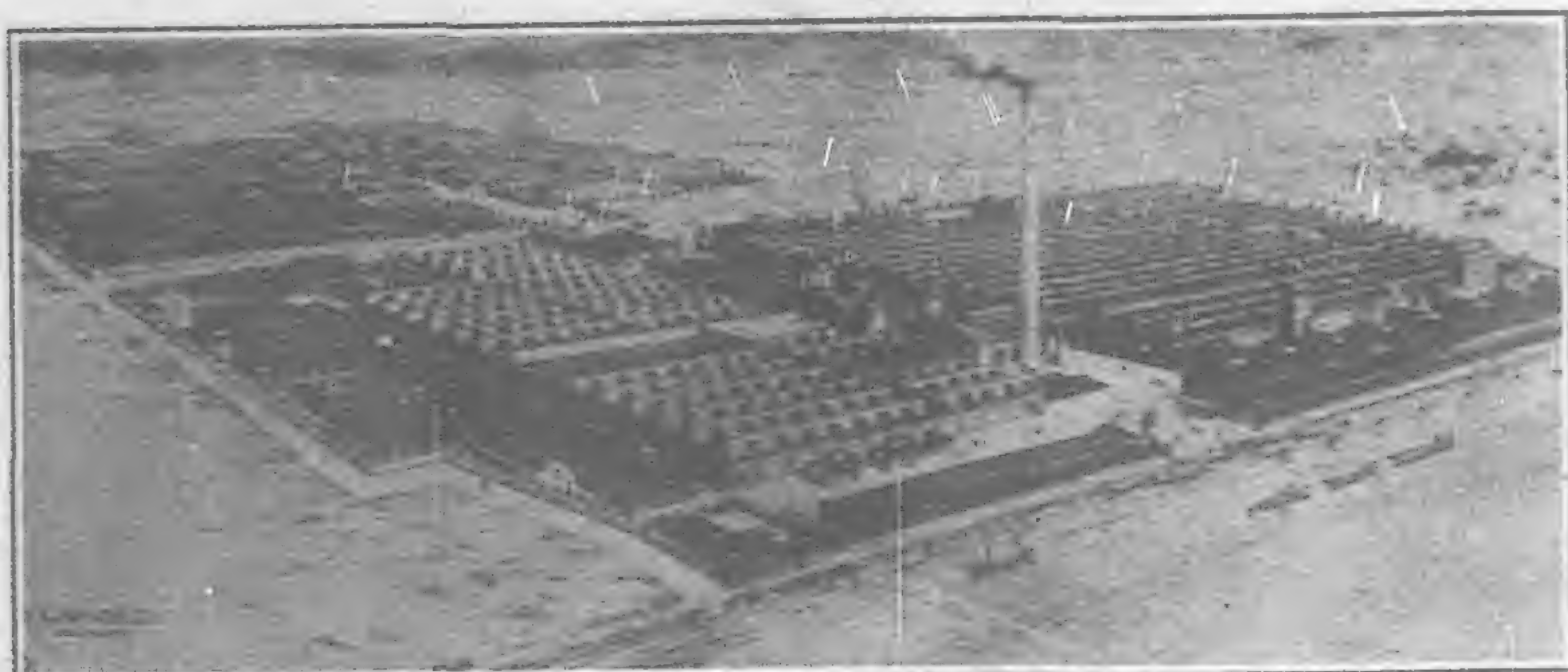


Weaving Room



## Eight Mills of the Toyo Cotton Spinning Co., Ltd.

This Company Operates 21 Mills and Has 45,000 Employees



Oji Factory



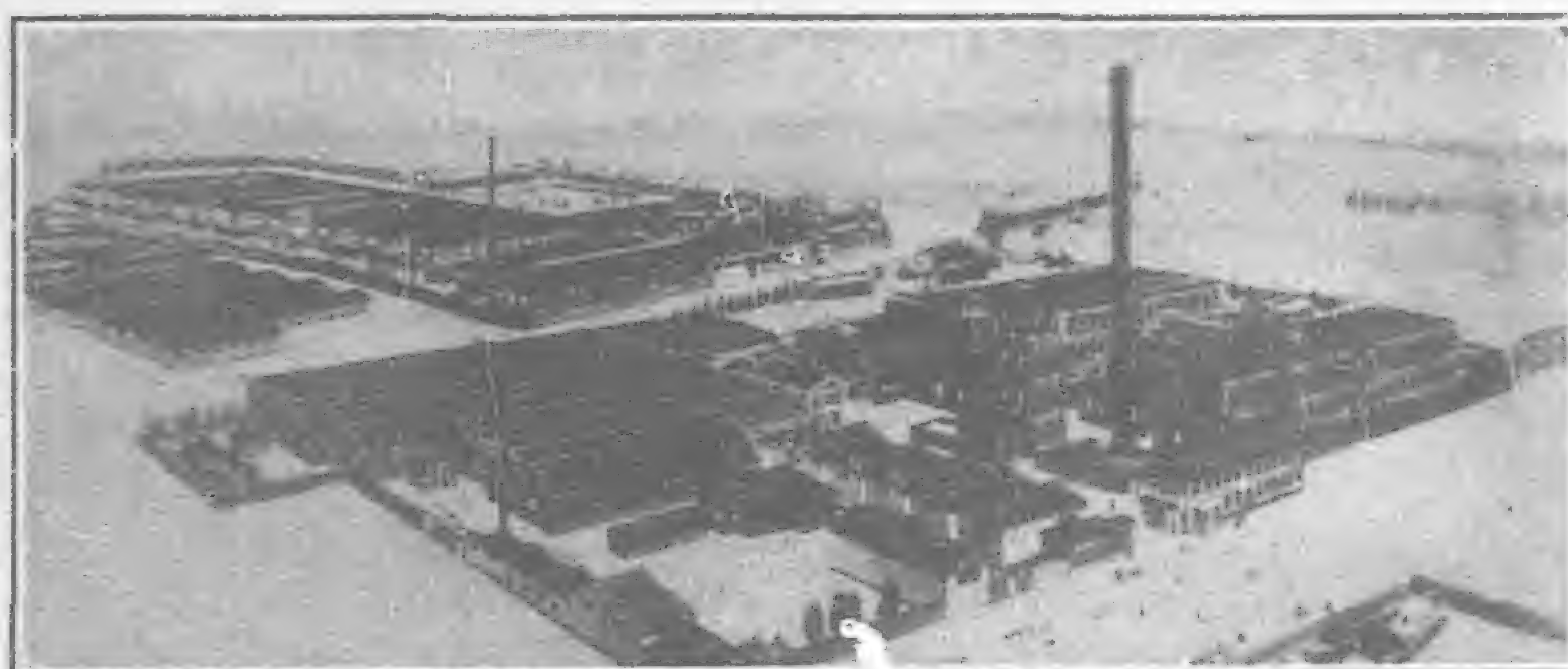
Kuribashi Factory



Tsu Factory



Nishinari Factory



Yokkaichi Factory



Aichi Factory



Nagoya Factory



Tsushima Factory

of June 30, 1923, the number of ring spindles operated by members of the association registered a decrease of 435,350, while mules declined from 48,470 to 14,370, a loss of 34,100. The Kanegafuchi Cotton Spinning Company, with 94,504 ring spindles at its principal factory in Tokyo at the end of June, 1923, had only 72,568, at the end of the year. The Fuji Gas Spinning Company, with three factories in the Kanto district, at Koyama-machi, Shizuoka prefecture, Kawasaki-machi, Kanagawa prefecture, and Oshiage-machi, Honjoku, Tokyo, lost something like 307,440 ring

and 31,600 mule spindles. The company's doubling spindles dropped from 107,436 to 19,816.

The decrease in looms was comparatively small, from 62,205 to 61,421 excluding the number of looms owned by non-members of the association.

During the past 20 years, the number of ring spindles registered a steady increase, while mules decreased. On June, 30, 1903, there were 1,288,706 ring which increased to 4,618,946 at the end of June, 1923. Mules, fell away from 91,260 to 48,470 in the same



period. The following table tells of the progress made by members of the cotton spinners' association during the last ten years:—

Years.	Spindles.		Doubling	
	Ring	Mule	Spindles	Looms
1913	2,365,094	49,405	320,812	24,224
1914	2,606,004	51,170	348,766	25,443
1915	2,754,124	53,390	355,318	30,065
1916	2,825,944	49,960	370,681	31,293
1917	3,008,568	51,910	383,458	36,181
1918	3,175,763	51,910	384,872	36,181
1919	3,435,932	52,330	410,690	40,391
1920	3,761,250	52,330	466,460	44,401
1921	4,116,616	44,510	533,334	50,583
1922	4,472,112	45,500	602,032	60,756
1923	4,183,596	14,370	501,031	61,421

Production statistics are set forth in the following table:—

Items.	December, 1923	December, 1922
No. of Companies	55	61
Working spindles:		
Ring	3,934,926	4,022,139
Mule	29,553	42,376
Total	3,964,479	4,064,515
Working days	156.5	156.0
working hours per day	18.50 hours	21.00 hours
Average count of yarn:		
Ring	20.9s	20.4s
Mule	35s	26.7s
Yarn produced		
Ring	51,066,627 Kan	55,219,718
Mule	172,944 "	269,978
Total	51,239,571 "	55,489,696
Average per day per spindle production:		
Ring	84.5 monme	93.2 monme
Mule	48.6 "	35.4 "
Cotton Consumed	58,609,499 kanme	63,570,309 kanme
Output of cotton fly	7,118,007 "	7,554,898 "
Output of waste yarn	387,208 "	502,852 "
Coal consumed	621,458,432-lbs.	706,612,119-lbs.
Average price of coal, per 10,000-lb.	Y.71.73	Y.70.58
Actual power used		
per day—steam	53,702 h.p.	61,300 h.p.
Water, electricity & gas	77,058 h.p.	71,757 h.p.
Coal consumed per h.p.		
per hour	3.338-lbs.	3.318-lbs.
Daily average number of hands:		
Men	36,724	42,130
Women	119,911	135,431
Average wages per day:		
Men	Y.1.481	Y.1.537
Women	1.181	1.234

### Consumption of Raw Cotton

(In kanme of 8.27-lbs.)

Years	Years
1913	1919..
1914	1920..
1915	1921..
1916	1922..
1917	1923..
1918	

The consumption of raw cotton during the latter half of 1923 amounted to 58,609,499 kanme, which was a decrease of 5,045,000 kanme. Of this total 38,071,898 kanme was Indian cotton, against 16,596,161 kanme of American cotton. Chinese cotton amounted to 1,513,886 kanme, against 1,586,537 kanme for the previous half year.

The semi-annual consumption of Chinese cotton, which went beyond 9,400,000 kanme in 1919, decreased abruptly to 120,530 kanme in 1921. But recent tendencies indicate a steady increase in imports of Chinese cotton.

Egyptian raw cotton in 1923 rose to 1,238,384 kanme. This was a decline of approximately 200,000 kanme from 1922.

Comparative statistics of raw cotton importations into Japan by countries are as follows:

Countries	1923	1922
British India	Y.263,026,162	Y.209,897,193
U. S. A.	177,550,743	178,808,772
China	39,221,014	28,521,188
French Indo-China	616,061	922,995
Africa	19,541,260	8,464,530
D. I. E.	209,278	615,510
Siam	34,929	—
Straits Settlements (F.M.S.)	820,257	523,760
Others	12,151,756	86,943
Total	Y.513,172,458	Y.427,840,891

When converted into bales of 300 *kin*, the importation of raw cotton during 1923 amounted to 2,930,506 bales against 2,877,886 bales for 1922. This increase is mainly due to overwhelmingly heavy imports of 1,997,901 bales during the first six months of 1923.

The production of cotton yarn in Japan has shown an unceasing increase, but its export, however, waned after the European war boom period, as seen in the following table of 300 *kin* bales.

Years	Production	Exportation
1914	1,666,184	596,990
1915	1,720,264.5	575,891
1916	1,925,579	547,147
1917	1,923,841.5	470,852
1918	1,803,666	421,512
1919	1,920,782.5	230,333
1920	1,816,976	304,925
1921	1,811,350	292,260
1922	2,228,246	394,062
1923	2,171,153	248,324

Except the temporary boom witnessed in April, May and June of 1922, when the monthly exportation of cotton yarn ranged from 46,000 bales to 84,000 bales, Japan's monthly sales abroad usually fluctuated between 12,000 bales and 32,000 bales. But in 1923, the exportation of cotton yarn from Japan decidedly increased. The monthly exportations, which had ranged from Y.4,000,000 to Y.6,000,000 jumped to Y.8,962,000 in March, 1923, and to Y.13,882,000 in April, 1923.

The activity of cotton yarn exportations from Japan is attributed to the (1) the depreciation of the yen, which made the price of the Japanese product the lowest in the world; (2) the cotton spinners' strike in Bombay, causing a decrease of supply in Hong-kong and Singapore, and (3) the increased consumption of cotton yarn in China.

The exportation of cotton yarn by countries is shown as follows:

Countries	1923	1922
China	Y.38,503,001	Y.62,285,072
Hongkong	11,534,733	23,478,306
Philippines	771,632	910,275
Kwantung	3,881,021	5,891,325
British India	20,511,884	20,666,783
Asiatic Russia	54,255	53,460
D. E. I.	1,364,454	—
Others	1,890,981	1,538,034

Total Y.78,511,961 Y.104,723,255

Japan imported 5,978 bales of cotton yarn during the last half of 1923, an increase of 5,624 bales, that period. The importation of cotton yarn into Japan has fluctuated rather widely, as seen in the following table, which also gives the domestic consumption of cotton yarn:—

Years	Importation	Domestic Consumption
1914	607	1,096,798
1915	588	1,449,615
1916	660	1,379,092
1917	1,004	1,453,893.5
1918	1,088	1,383,542
1919	8,907	1,699,356
1920	5,121	1,517,172
1921	2,579	1,521,569
1922	3,126	1,787,310
1923	6,332	1,929,161



Loans on raw cotton and cotton yarns by banks in Osaka and Kobe averaged for the last half of 1923 some Y.40,288,000 including Y.30,017,000 for a raw cotton. The loans made against the same commodities during 1922 were Y.18,057,000. This includes Y.8,777,000 loaned on raw cotton.

### Cotton Textile Industry

During the latter half of 1923, 42 members of the association operated 52,626 looms, manufacturing 497,342,927 yards of cotton textiles. The average of working days period was 154 days, with 12.59 as the daily working hours. The per day, per loom output reached 53.23 yards. The consumption of cotton yarn by these companies was 120,001,910 pounds and the production of waste was 1,747,012 pounds. The average number of workers in textiles was 8,045 men and 40,306 women. The men's wages averaged Y.1.479 a day. Women workers averaged Y.1.185.

Compared with the first half of 1923, looms decreased 691, and the total production 6,024,038 yards. However, the number of looms in the last half of 1923 increased 407, over 1922, and the output was 52,872,939 yards greater.

Consumption of cotton yarn in the last half of 1923 declined by 976,155 pounds from that used in the first half of the year, but, compared with the corresponding period of 1922, it increased 20,174,542 pounds.

The annual output of Japan's cotton weaving industry is as follows :

Years	No. of looms	Production (Yards)	Yarn Consumption (pounds)
1914	.. .. 49,822	504,901,674	123,863,966
1915	.. .. 55,374	512,016,621	124,632,631
1916	.. .. 60,220	560,210,103	136,413,408
1917	.. .. 63,840	594,649,419	142,770,758
1918	.. .. 72,789	656,935,420	160,301,569
1919	.. .. 82,789	738,955,766	179,898,560
1920	.. .. 89,270	761,037,360	189,651,320
1921	.. .. 88,218	700,697,985	176,527,501
1922	.. .. 102,065	889,327,652	213,327,505
1923	.. .. 105,943	1,000,708,890	240,979,975

The importation of weaving machinery into Japan during the latter half of 1923 was valued at Y.829,029, an increase of Y.322,576. The total importation in 1923, which amounted to Y.1,335,482 was an increase of only Y.2,142 over 1922.

Japan's exports of cotton textiles during the latter half of 1923 showed an increase over the first half of the year. Yearly exportations to various countries follow :

Countries	1923	1922
China .. ..	Y.100,292,315	Y.108,757,781
Kwantung province .. ..	14,617,573	18,494,039
Hongkong .. ..	11,625,461	10,212,743
British India .. ..	36,546,103	33,567,336
Straits Settlement .. ..	6,048,085	5,892,104
D. E. I. .. ..	22,534,624	24,938,051
French Indo-China .. ..	26,334	115,090
Asiatic Russia .. ..	685,830	1,094,905
Philippines .. ..	5,398,857	345,260
Siam .. ..	1,432,448	1,362,544
Britain .. ..	5,791	48,870
United States .. ..	2,503,531	4,125,990
Argentina .. ..	1,221,876	—
Africa .. ..	14,613,675	1,508,652
Australia .. ..	6,064,102	6,290,925
New Zealand .. ..	467,726	633,819
Hawaii .. ..	419,285	321,637
Others .. ..	9,240,584	474,743

The importation of foreign cotton textiles into Japan, during the latter half of 1923, amounted to Y.3,788,043, an increase of Y.248,381 over the first six months of the year. Compared with the corresponding period of 1922, there was a decline of Y.1,144,594. The following table sets forth the annual importation of foreign cotton textiles :

Countries	1923	1922
Great Britain .. ..	Y.6,843,359	Y.12,882,491
United States .. ..	231,191	475,533
Other countries .. ..	203,155	211,677
Total .. ..	Y.7,277,705	Y.13,569,701

The monthly exportation of cotton textiles has registered a steady increase especially since February, 1924, when the value of yen in the international money market started to decline. Japan exported something like Y.94,790,000 worth of cotton textiles during the first four months of this year. This showed increases of Y.19,000,000 and Y.24,000,000 as compared with 1923 and 1922.

The Dai Nihon Boseki K. K. or the Japan Cotton Spinning Company Ltd., was established in June, 1889. The present authorized capital amounts to Y.51,000,000, all paid up. The company held reserves amounting to Y.30,000,000 at the end of December, 1923. This company has 12 factories ; four in Osaka prefecture, three in Hyogo prefecture two in Nara prefecture, one each in Tokyo, Gifu and Aichi prefectures. Its head office is at 3 chome Bingo-machi, Higashi-ku, Osaka. The total capacity is now 572,870 spindles (560,480 ring and 12,390 mule) in addition to 153,728 doubling spindles. Looms of this company are 5,516.

Among other factories, the Ogaki factory, illustrations of which are shown, is situated in Ogaki city, Gifu prefecture. It has 44,672 ring spindles and 1,188 looms. The Tsumori factory of the company, which is in Nishi-Nari gun, Osaka prefecture, has 62,668 ring spindles, the largest number among the 12 factories. There are 14,280 doubling spindles and 1,678 looms at this factory.

The Toyo Boseki K. K. or the Oriental Spinning Company, which is another of Japan's larger cotton mill operators, was established in June, 1913. The authorized capital is Y.50,600,000 of which Y.31,850,000 is paid up. The reserves are Y.35,995,335. This company has 18 factories, with 582,288 ring, 44,628 doubling spindles, and 13,135 looms. The head office of this company is at 2 chome, Dojima Hamadori, Kita-ku, Osaka.

The Kanegafuchi Boseki K. K. (The Kanegafuchi Cotton Spinning Company), which is Japan's champion cotton mill, was established in May, 1887. The authorized capital was Y.18,127,650 at the end of December, 1923, of which Y.16,486,970 was paid up, the reserves amounting to Y.37,538,956. This company has 17 factories, with 511,964 ring and 92,846 doubling spindles it operates 8019 looms. The head office is situated at Sumida-mura, Minami Katsushika-gun, Tokyo prefecture.

### Restoration of Cotton Spinning Mills

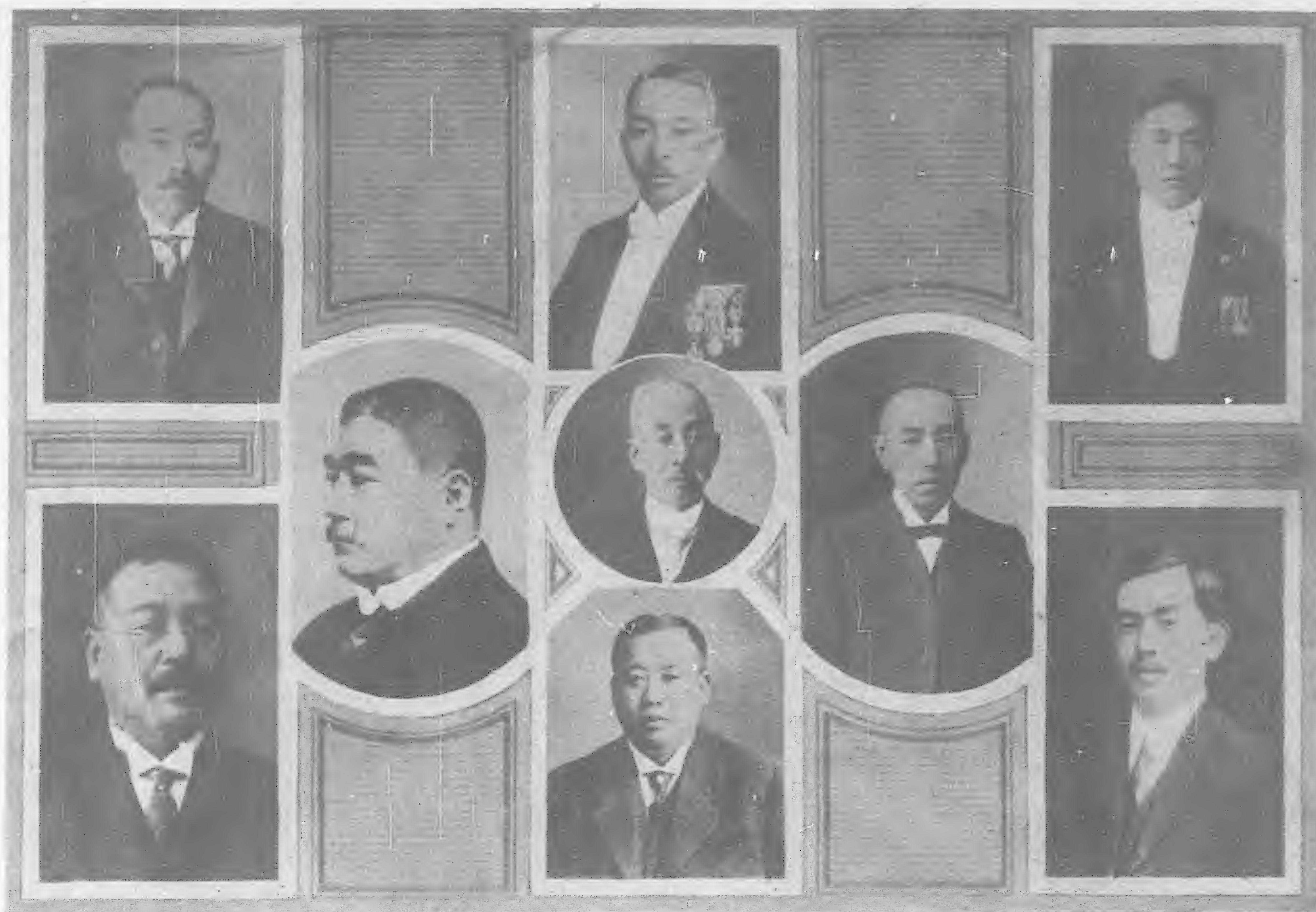
Among the cotton spinning mills destroyed by the earthquake and whose capacity has been practically entirely regained are those owned by the Kanegafuchi Cotton Spinning Company, 30,000 spindles, the Nisshin Cotton Spinning Company, 52,000 spindles, the Tokyo Cotton Spinning Company, 20,000 spindles, and the Hashiba factory of the Dai Nihon Cotton Spinning Company, 78,000 spindles. The cotton spinning mills of the Tokyo Muslin Company, 20,000 spindles, and the Toyo Muslin Company, 48,000 spindles, have also been restored. The Toyo Muslin Company, in addition, is now rushing the construction of a mill in Shizuoka prefecture, which will have approximately 40,000 spindles.

The Fuji Gas Spinning Company, which received the heaviest blow by the earthquake, has restored something like 30,000 spindles, about 18,000 spindles of the Koyama No. 1 factory, and 12,000 spindles of the Koyama No. 2 factory. The Kawasaki factory of the Fuji Gas Spinning Company is now operating some 30,000 spindles. The Sagami Spinning Company, which had 30,000 spindles before the quake, is now restored to 20,000 spindles. The construction of the Oji factory of the Toyo Cotton Spinning Factory was begun in April, this year. This factory had approximately 60,000 spindles, but it soon will be restored to the extent of 30,000 spindles.

The Dai Nihon Cotton Spinning Company has given up the Fukagawa factory, Tokyo, which had 34,000 spindles and 9,000 doubling spindles. The Fuji Gas Spinning Company has also abandoned its Oshiage factory, Tokyo, which had 59,000 spindles and 21,000 doubling spindles. The Yokohama factory of the Hattori Cotton Spinning Company has also been given up ; it had 11,000 spindles before the quake.

Among the spinning mills in which restoration work is making very slow progress are the Nos. 3 and 4 factories of the Fuji Gas Spinning Company at Koyama. The Odawara Cotton Spinning Company, which had 30,000 spindles, and the Nerima factory of the Johm Moslin Company, are also making but little progress in the work of restoration.





SOME LEADERS OF JAPAN'S TEXTILE INDUSTRY

Mr. Y. Kinbaro, Managing Director, Mousseline Boshoku K. K.

Mr. Hisao Matsuo, Managing Director, Jomo Muslin Co., Ltd.

The Late Mr. T. Wada, President, Fujigasu Spinning Co., Ltd.

Mr. Katsutaro Inabata, President, Mousseline Boshoku K. K.

Dr. Kyoza Kikuchi, President, Amagasaki Spinning Co., Ltd.

Mr. M. Kita, President, Japan Cotton Trading Co., Ltd.

Mr. Denshichi Ito, President, Toyo Boseki K. K.

Mr. S. Kawasaki, Director, Mousseline Boshoku K. K.

Mr. A. Yamada, Managing Director, Japan Cotton Trading Co., Ltd.

## 2.—Japan's Woollen Industry

A Critical Survey by the British Vice-Consul at Yokohama

THE department of overseas trade has issued an interesting report upon the wool textile industry of Japan, furnished by the British vice-consul at Yokohama.

The work of collecting the materials on which the report is based was completed about a week prior to the earthquake of September 1, 1923, and as Tokio is one of the two great centres of this industry in Japan, the data relating to this area describes a state of development which has to a considerable extent been impaired. It therefore, would, be a useless task to describe the pre-earthquake conditions in any detail. In the first place, some of the factories in and around Tokio were very small, so that their destruction would not seriously affect the total output of the industry.

Secondly, in regard to the important factories which were damaged or destroyed, some of them at any rate were owned by companies which also operate in the unaffected area west of Nagoya. The organisation of such companies has not been destroyed, and they will be in a position to revive their activities when financial conditions enable them to do so. But apart from these considerations there is the more fundamental fact that the Japanese real demand for woollen fabrics is steadily and visibly growing, so that there is an expanding home market offering its attractions to men of enterprise. Moreover, it is most unlikely that the Japanese, having once reached a certain stage in the development of the industry, will

ever rest content until they have at least regained the position where they stood before, and one may venture on the prophecy that in the course of a few years the industry will have fully recovered from the recent setback, and perhaps even have advanced still further.

Historically the industry in Japan began with the installation of weaving plants, manufacturing cloth from imported yarns, then spinning machinery was imported to operate on imported tops. Later still carding and combing machinery was imported for the manufacture of tops in Japan, and at the present time there are several large companies which carry on all the processes of woollen manufacture from the raw material to the finished article.

In many cases such firms only produce a portion of the tops and yarns which they require, and import the rest, but it may safely be said that those who control the Japanese woollen industry will never be satisfied until they are able to produce the bulk of the tops and yarns which they require and to cut down foreign imports to a minimum. The following figures give some indication of the great advance made since 1914: there has been nearly a sixfold expansion in the industry as a whole:—

	1914.	1923.
Ring, cap, and flyer spindles ..	4,600	nearly 50,000
Worsted mule spindles ..	120,000	350,000
Woollen mule spindles ..	120,000	500,000
Noble combs ..	—	60
Continental combs ..	—	350



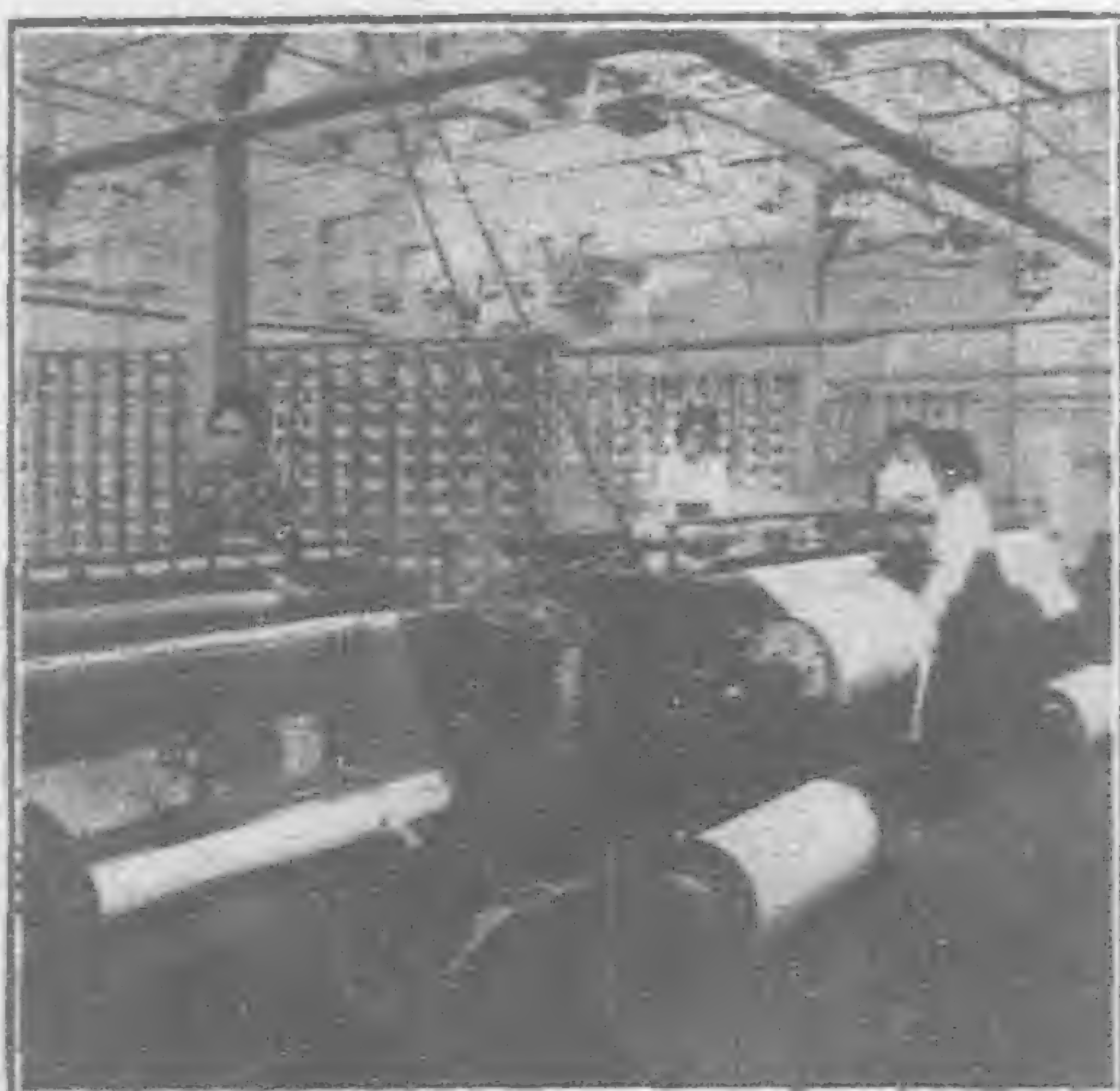
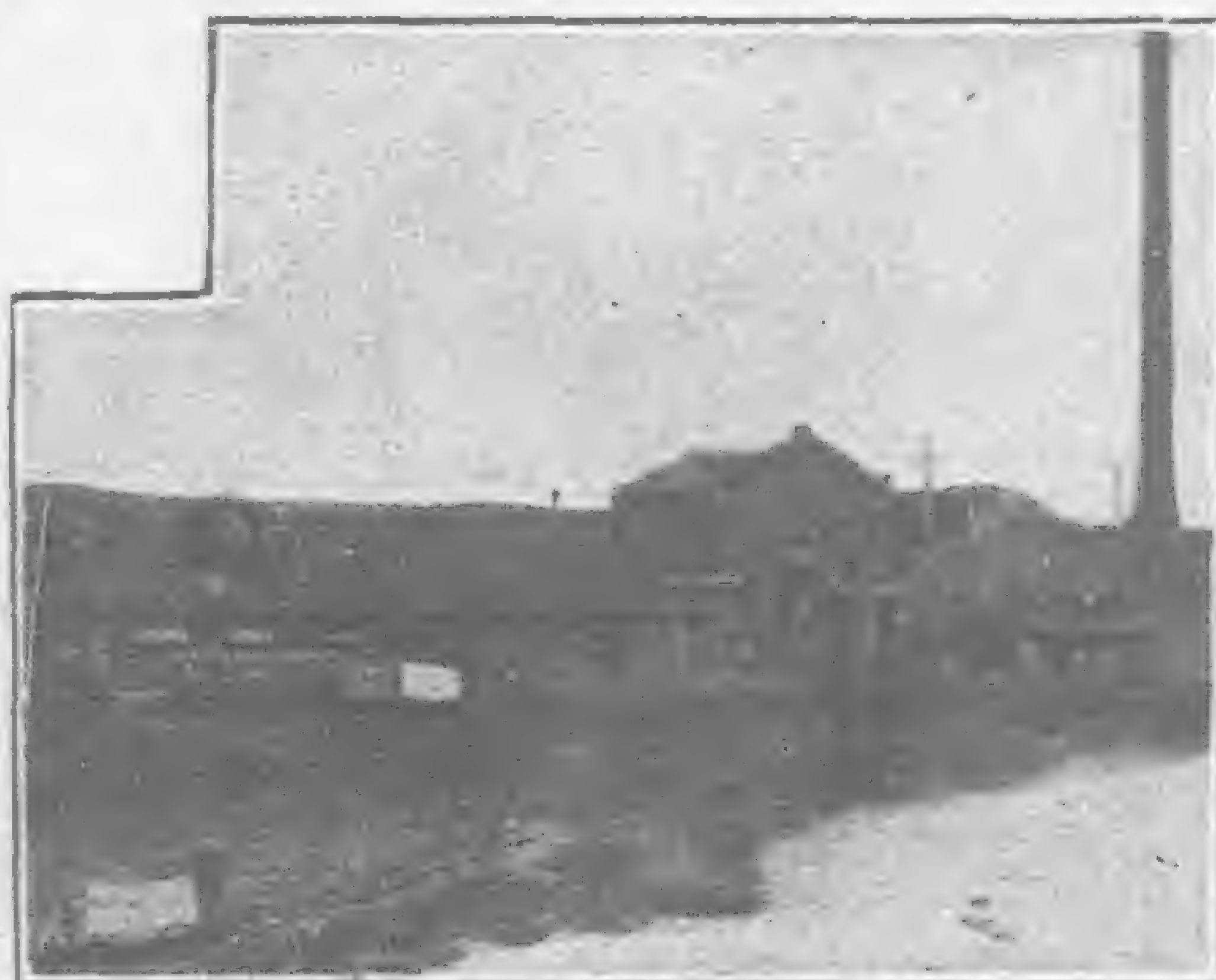
It is worth noting that early this year a Japanese firm (Goto Keori) imported two Lister combs for use with alpaca—the first machines of this type to be brought to Japan. But as alpaca fabrics are much used in the country further developments along this line may be looked for. One occasionally sees Japanese-made looms for the simplest kind of weaving, which appear to work fairly well, and attempts have even been made to manufacture a comb, but practically all the above machinery has been imported, because Japanese efforts to make textile machinery have not met with much success. A good proportion of it comes from the United Kingdom, but French, German, and American machinery is also in use.

The United Kingdom then holds no monopoly in the manufacture of wool textile machinery. That machinery has a high reputation in Japan because of its quality, but if the Japanese were to be prevented from obtaining it their industrial expansion would not thereby be thwarted. They already use quantities of very good Alsatian machinery, and they would if necessary use more, and employ French or German technicians, as indeed they already do.

Such a course of action would be followed all the more easily in Japan, because they have so largely adopted continental rather than English methods; the most important woolen product in Japan is mousseline de laine, copied from France and not from Great Britain, where very little of it is produced; most of the spinning is dry spinning and not oil spinning as in Great Britain, and the finishing processes are continental and not English. The fact is that the growth of the Japanese woolen industry is simply a phase of that determination to achieve industrial self-sufficiency which is widespread in the modern world, and constitutes a wide economic problem in itself.



General View of Muslin Factory at Nakatsu, Nishinari-gun, Osaka



Toyo Muslin Kabushiki Kaisha (Oriental Muslin Co., Ltd.) General Views of First and Second Factories; Spinning Shed; Packing Room

Notwithstanding the great development of the industry since pre-war days, Japanese imports of woolen textiles are still considerable, as the following figures show:—

	Woolen fabrics of all kinds, 1,000 sq. yds.
Best pre-war year	15,000
1918 .. ..	5,400
1919 .. ..	4,000
1920 .. ..	11,000
1921 .. ..	12,000
1922 .. ..	25,000
1923 (six months)	10,000

These figures do not indicate any tendency toward a diminution of imports, and the recent disaster will no doubt have the effect of delaying the appearance of any such tendency. If it be asked why the imports have continued at such a level, the answer would seem to be threefold:

1. The most important single product of the native industry is muslin, chiefly used for native style garments, particularly those of women. Comparatively little muslin has been imported into Japan, at any rate in recent years, because it was perceived a long time ago that this fabric was peculiarly suited to the Japanese climate and Japanese dress; consequently its manufacture was started at an early stage, and the growth of the productive capacity of the industry for muslin has kept pace with the growth of the demand, and the muslin branch of the industry has been its most flourishing part.

2. As regards the woolen fabrics for foreign style clothing, which is chiefly worn by men, those produced in Japan are often of very poor quality, and can only find a sale owing to the protection of import tariffs, though some very good plain cloths are made. But in any case there is a demand for cloth of high quality, and this has to be imported, principally from the United Kingdom.



3. The third and widest reason for the continuing high level of imports is that the Japanese demand for woollens has grown and is still growing more rapidly than the Japanese woolen industry, and it is difficult to say how

long this state of things will continue. There were signs, before the earthquake disaster altered the situation, that the industry was beginning to overtake the demand. Indeed, as regards mousseline de laine appearances pointed to a state of over-production within a year or two, and there were some who anticipated that the scale of muslin production within that time would reach 200,000,000 yards per annum. Men living in the cities are finding more and more that European clothes are the most suitable for Westernized conditions, and among women and children, as well as among men, woollen knitted goods are being used more and more. In connection with the popularity of mousseline de laine, it may here be mentioned that the English adviser of the Goto Keori Kaisha recently succeeded in making a muslin yarn of wool and silk waste, from which an attractive fabric is being made at a low retail price.

### Industrial Organization

In the matter of industrial organisation, an observer familiar with conditions in the West Riding of Yorkshire is at once struck by great differences.

After describing the slow growth of the British wool industry over a period of more than a century, the report continues:—

The story of the Japanese woolen industry is different both as to origin, development, and result. The small beginnings date back to nearly fifty years ago, and joint-stock companies have been the general rule all the time. The government, too, took an interest in the rise of the industry, and one of the most important factories in the country is owned by the ministry for war.

At the present time there are upwards of thirty such companies, the largest of them owning three or four large mills each, and the total capital will not be far from £20,000,000. Accordingly large-scale amalgamation may be said to be characteristic of the Japanese woolen industry (although there are also some quite small companies), and it is interesting to observe that there are some mills in Japan larger than any in England.

Owing, however, to the fact that the full economies of production can be attained in a factory of moderate size, the mere size of some of these Japanese mills means nothing so far as efficiency is concerned. The cause is rather to be found in the fact that the average Japanese woolen company is not a specialised organism at all. Not only does it aim at carrying on all the processes of manufacture, which would not be considered unusual from an English point of view, but it also manufactures both woollen and worsted cloth, and sometimes things like blankets and rugs and felt and other things besides. The most specialised firms are those which manufacture muslin, but even one or two of them manufacture woollens as well, or, if not



Kuzuke Mill of the Jomo Muslin Company, Ltd.

sequently the industry has to reckon at the outset with a higher relative capital outlay for land than is the case in most other countries. Moreover the sites of some of the earlier factories were badly chosen in areas which were waterlogged and liable to river floods or in places where no soft water was available. All these things meant expense in one way or another, but experience has led to greater care being taken in the case of newer firms. Practically all the Japanese mills are run by electric power: some make it for themselves, but more commonly it is obtained from a power company.

Nearly all the raw wool used in Japan is imported from Australia, but a certain amount, not very large, comes from South Africa, South America, and China.

Tops are imported from the United Kingdom or Australia, and yarn from Germany and the United Kingdom. It is probable that at the present time Japanese importing firms like Mitsui, Okura, Kanematsu, and Iwai handle more of this business than the foreign firms. It is not surprising to find that there is very little woollensing in Japan. In some even of the largest factories there is no wool-sorting department at all: the raw wool passes straight from the bale to the washing machine.

Here lies one great and probable permanent weakness of the Japanese woolen industry. Woollensing is a process which cannot rely on machinery; it depends absolutely on the sorter himself, on the sensitiveness of his eye and hand, and his knowledge of the material with which he is dealing. In England men acquire this knowledge through the practical experience of a score of years, and they have no counterpart in Japan. It follows that wool-sorting in the latter country is indifferently done, and, therefore, the tops and yarns of native manufacture are not on the whole noted for evenness. But evenness is one of the most important criteria of successful manufacture, and an English firm wins a high reputation when merchants can rely on getting from it textures which are even throughout a large number of pieces, and true to specification over a long period of years. In Japan such a degree of evenness is not achieved.

As regards plain goods, however, it may be expected that Japan will in a few years be able to supply all her own needs: the highest grades of cloth and fancy goods will continue to be imported for a long time to come because the Japanese cannot attain to the high quality of finish that the best English goods possess. Their methods of finish are continental, but experienced observers agree that it is not necessary for the Japanese industry to adopt the more expensive English finishing processes, because goods of medium quality are quite good enough for the greater part of the Japanese market, the persons who appreciate the fine qualities of the highest grade cloth being a very small number.

If Japanese mills were properly supervised they would be



Settsu Mill of the Settsu and Amagasaki Cotton Spinning Co., Ltd.



dangerous competitors, as is proved by the few cases where mills have been under the technical control of foreign experts, but in actual practice it is only foreign competition which keeps the native manufacturers up to the mark at all. One great weakness is that there is no class corresponding to the over lookers in an English factory. The technical side of a Japanese mill is generally in the hands of quite young men who have taken a course at a technical school, but possess very little practical experience. Such men are far too fond of experimenting with the machinery instead of devoting their attention to such a dull subject as the production of an even yarn.

Unquestionably there is much ability on the theoretical side: Japanese have studied keenly in Bradford and Leeds, and I am informed that in some of the mills there are designers who would bear comparison with any, but for some reason or other there is weakness when it is a question of translating theory into practice. Even operatives at times interfere with the machinery, and I have myself seen a comb-minder using a spanner on a delicate part of his machine for no apparent reason at all. As a consequence of this state of things and of the lack of skill among the operatives, the proportion of waste in most mills is extremely high.

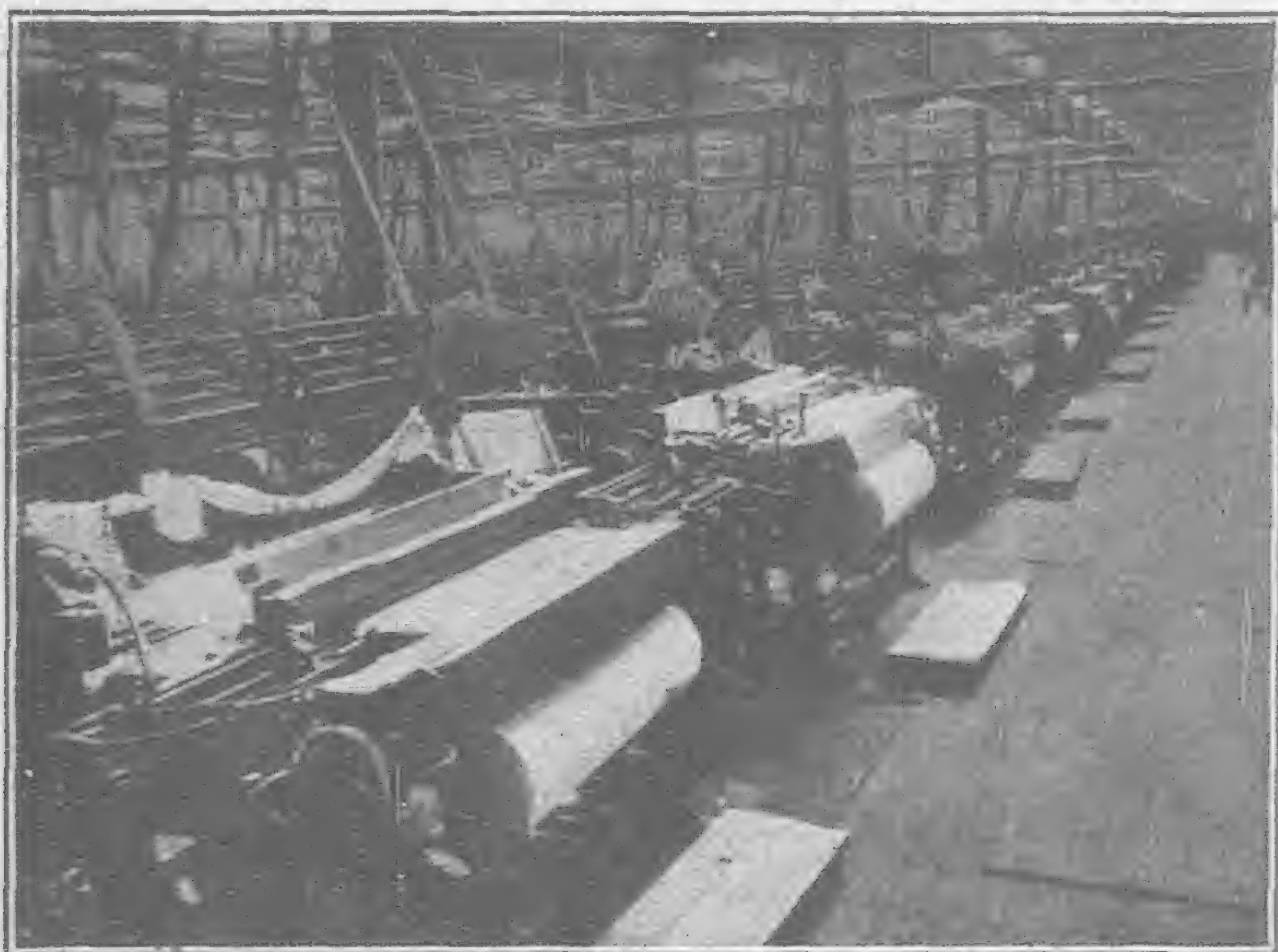
Perhaps the greatest difficulty of all that the Japanese manufacturers have to face is this, that they cannot get skilled labour. The hereditary skill passing from one generation to another in Yorkshire is quite unknown in Japan. It is very unusual for a girl to stay in a factory for more than about two years, so that the staff is constantly changing.

A description here follows of the firms which were visited in the course of this investigation. Some of the most important woolen

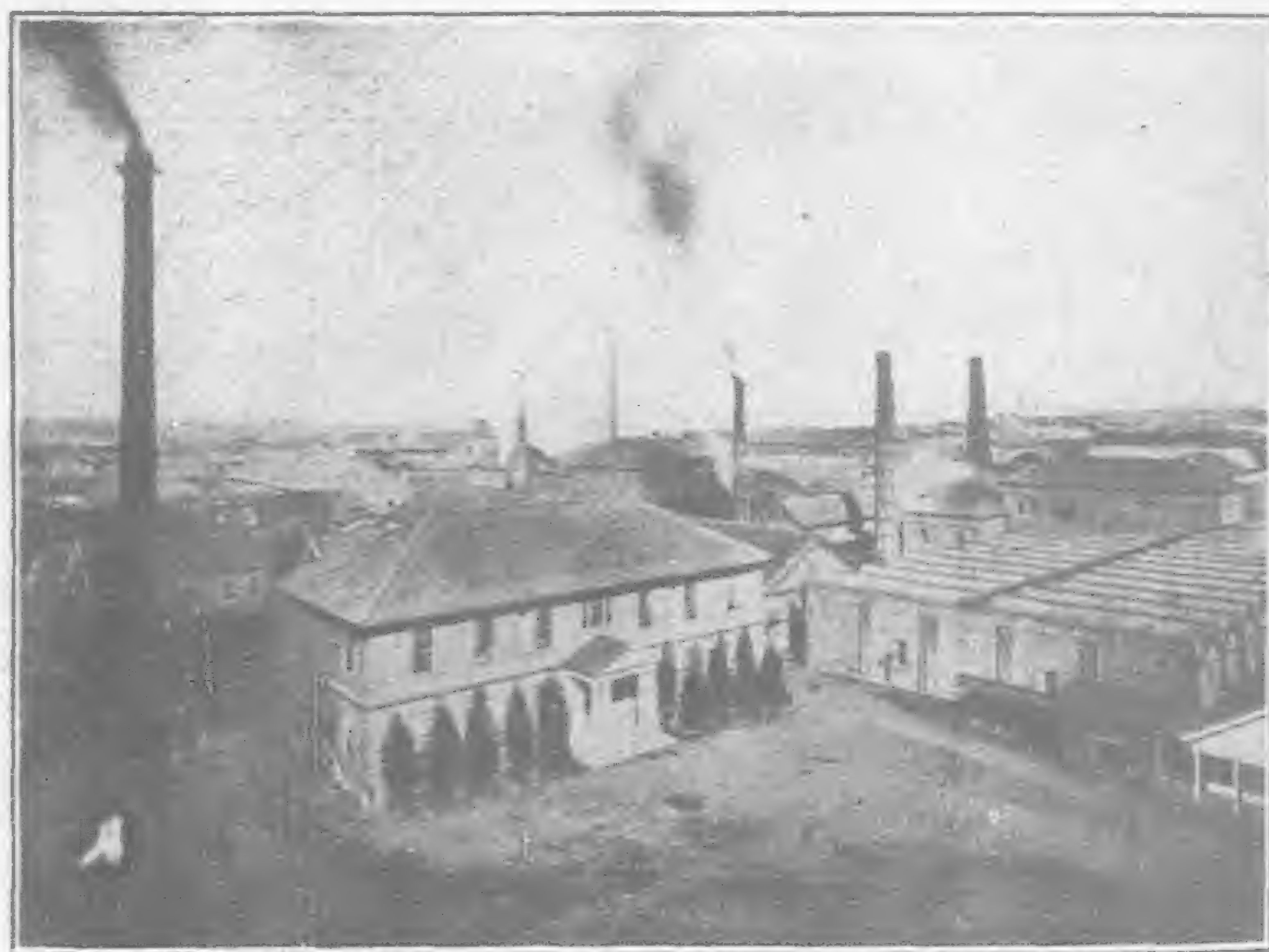
appeared to be Japanese, but a great many had been supplied by a British firm. There were 400 looms altogether, with 600 workpeople, but the number was to be increased at an early date to 900 by means of changing over 500 looms which at the time of my visit were being used for cotton tissues. I did not see any machinery standing idle in any department.

**Other Departments.**—The company is principally engaged in spinning and weaving from imported tops, but it does carry out other worsted processes as well, though they are not yet on any great scale. It should perhaps be mentioned that the firm does all its own bleaching. I was not able to see these departments, but all stages are represented, from sorting to bleaching, and I understood from the manager that they were studying dyeing. The combing equipment is one set of twelve continental combs, and the carding machines are eight in number. These miscellaneous departments give employment to a further 200 workpeople.

**Raw Materials and Output.**—I was told that the firm made about 25 per cent. of the tops it required, the remaining 75 per cent. being imported, largely from the United Kingdom. The raw wool used is entirely Australian merino, because the tops required are all of the finer counts between 64's and 70's. When working full time the mill can turn out well over 1,000,000 yards of muslin per month. The organization of the plant, enabling all worsted processes to be carried out, from the raw material to the finished tissue, is parallel to that of many worsted factories in Yorkshire. The size of the combing and carding plants relatively to the spinning and weaving is also significant as illustrating the stages by which the industry in Japan has grown: first, the weaving of imported yarns; secondly,



Interior of Mill of the Mousseline Spinning & Weaving Company, Ltd., at Nishinari-gun, Osaka



The Senju Woolen Cloth Factory operated by the Army Department of the Imperial Japanese Government

mills in Japan are included, and between them they represent every noteworthy feature of the industry in the country.

### Toyo Muslin Company

This company was formed just after the Russo-Japanese war, and now owns two woolen factories as well as two cotton factories closely adjoining. The one I visited was a well-equipped modern building of the layout that is usual in Japan. The company manufactures cottons as well as muslin, and the cotton branch appeared to be on a larger scale than the woolen. In reply to a question the manager stated positively that they did not manufacture any composite fabric of woolen weft and cotton warp.

**Spinning Department.**—All the spinning is done by mules combined with French drawing, because this method gives a worsted yarn which is softer and fuller than that produced in any other way, and is therefore very suitable for the manufacture of muslin. Many of these machines were of Alsatian origin, but the majority had been supplied from Great Britain. At the time of my visit the number of spindles was 20,000, giving employment to 300 persons, but these spindles were to be increased to 40,000 within a very short time.

**Weaving Department.**—Since the tissue manufactured is a simple weave, the looms are entirely of the narrow "tappet" variety. Some of these again were of Alsatian origin, a few ap-

peared to be Japanese, but a great many had been supplied by a British firm. There were 400 looms altogether, with 600 workpeople, but the number was to be increased at an early date to 900 by means of changing over 500 looms which at the time of my visit were being used for cotton tissues. I did not see any machinery standing idle in any department.

the spinning and weaving of imported tops; thirdly, the manufacture from the raw material. The workpeople are predominantly women and girls, with a few men and boys. They appeared to be working quite contentedly and industriously, and the buildings themselves were airy and well-lighted from above so that the working conditions were satisfactory in every way. I have already mentioned the increase in spindles and looms that was projected. I had a general view of the premises from the roof, and could see one large extension practically completed and another about half finished. The number of employees in the spinning and weaving departments relatively to the number of machines is interesting when taken in connection with the complaints about overhead charges.

### Goto Keori Kaisha, Gifu

This is one of the most interesting as it is one of the most flourishing companies in Japan. The head of the firm, Mr. Goto, is one of the pioneers of the industry, and the factory is under the supervision of an Englishman. It is very extensive, and a wide range of goods is produced. There is less specialisation in the Goto mills than in a large Yorkshire mill, for both woollens and worsteds are manufactured. The main products are light worsteds (including muslin), but most fabrics are also produced, including velvets, plushes, and carpets.



**Preliminary Processes.**—Raw materials (both wool and tops) are largely purchased in Australia through such Japanese agents as Mitsui, Okura, and Kanematsu. In the Goto mills only the better grades of wool are used, and the principal item is merino for muslin. No wool-sorting is done at all. Wool passes straight from the bale to the washing machines, of which there are two, and also two drying machines. Next in order are :—

- (a) On the woollen side :—
  - 6 sets of cards,
  - 8 mules (3,000 spindles).
- (b) On the worsted side :—
  - 12 sets of cards,
  - 16 Noble combs,
  - 12,000 cap spindles.

Practically all the above are of British manufacture, and it is noteworthy that some of the spinning is oil spinning—a very unusual thing in Japan. Another interesting development at this factory is that it is operating the first alpaca spinning plant in Japan, as mentioned earlier in this report. A small beginning is being made with two Lister combs, one set of drawing machinery, and ten flyer frames (1,600 spindles), and it is intended to start a sorting department for the alpaca.

**Spinning.**—The range of counts is 5's to 100's (metric). The Goto Company is the first woollen firm in Japan to have individual electric drives for the machinery, and the electric power costs about Y.600 per diem for the whole of the works.

**Weaving.**—There are 600 looms altogether, some for woolens, but most of them for light worsteds. Four hundred of these are full width box looms, and 200 are narrow. There are also one or two special machines for plush, velvet, etc., and two Jacquard looms. Very few of these machines are British. I saw one or two of Japanese manufacture, but the great majority were German. Most of the machinery in this factory is quite new.

**Other Processes.**—No bleaching is carried out at the Goto mills, but there is both dyeing and finishing. As usual in Japan, finishing is done after the continental and American plan, not after the English, the finishing machinery being largely German.

**Labor.**—The number of workpeople is, roughly, 2,000, made up as follows :

**Worsted Section :—**

Combing, drawing, and spinning	..	350
Shortly to be increased to ..	..	500

**Woollen Section :—**

Carding and spinning	..	150
Weaving :—		
Including finishing ..	..	1,300

The average wage per diem is as follows :—

Worsted section (female) ..	..	Y.1.30
(male) ..	..	1.00
Weaving (mostly women) ..	..	1.50
Male plush weavers ..	..	1.80

At this mill there is the compound, or "living in" system, applying mainly to female spinners. Their food costs about 28 sen per diem, of which they pay 15 sen themselves, while the firm pays the rest. It thus appears that there is little difference between spinners and weavers' wages, and it is notable that male labor is cheaper than female, though most of the operatives are females. The workpeople are divided into day and night shifts, and each person works day shift and night shift alternately for a week at a time. The machinery is running twenty-two hours each day—a great economy of capital.

It would seem from these facts that labor is not so cheap as it is sometimes held to be. The hours worked by one person in a month are longer than in the case of an English operative, but the labor cannot be compared with English labour for efficiency. A spinner or weaver will be able to earn from Y.35 to Y.40 per month, or, roughly, up to about £1 a week.

At Goto mills, as elsewhere, the great difficulty is that labor is constantly changing. It is rare for an operative to stay more than eighteen months, and many stay a much shorter time. Bad conditions cause the girls to demand holidays periodically, and owing to non-attendance about 10 per cent. more persons are employed than would suffice to run the machinery at a given time.

### Senju Government Mill

Senju Seijujo is the only woollen mill in Japan actually owned by the government, and the bulk of its output is for army use. It

may be remarked, however, that some time ago officials of the war department visited every woollen establishment in Japan, taking particulars of the machinery, etc., so that in case of war these places could very speedily be turned on to government work.

As is generally the case in Japan, the factory is less specialized than an English factory in that it has both a woollen and a worsted section, the former being much the larger. The chief products are army cloth of all qualities, army blankets, knitting yarns for under-clothing and felt for saddles.

**Preliminary Processes.**—The raw materials used are :—

1. Australian (merino and crossbred).
2. Cape (mohair).
3. China wool.
4. Wool waste (treated by Garnett machines).

There is a sorting department, but, as might be expected, the sorting is very badly done. Most of the sorters are men, but the China wool is sorted by women, and into only two grades, the coarser for blankets and the finer as one ingredient for men's tunics. The blankets are composed of one part China wool and one part crossbred and waste.

**Washing and Drying.**—For this process there are two British machines.

**Woollen Branch.**—On this side are 36 cards and 45 mule frames for the manufacture of blanket yarns and yarns for woollen cloth. These machines are mostly of British make.

**Worsted Branch.**—This consists of two cards, three Noble combs, and 1,600 cap spindles (eight frames), mostly supplied by a British firm. On this side are manufactured the finer yarns for officers' clothing, and knitting yarns. Thus, taking the factory as a whole, there is spinning over a fairly wide range of counts.

**Weaving.**—The weaving plant consists of 210 broad looms (90-in.). Some of these are British, but most are German.

**Other Processes.**—The dyeing is done entirely with German dyes, and the finishing processes are, as usual, continental.

**Labor.**—The factory is worked in a single shift, 7 a.m. to 5 p.m., with one hour's rest. The workpeople number about 1,300 most of them being girls, of whom 200 can be accommodated in the compound in quite good quarters.

The percentage of waste is extremely high in most Japanese mills, and I saw no evidence which would lead me to suppose that the government mill is an exception to this rule.

As for wages, a woman can earn up to Y.1.20 and a man up to Y.2.00, and in addition the workpeople can obtain meals, baths, medical treatment, etc., on exceptionally favorable terms.

All the workpeople can buy goods and supplies from the canteen at cheap rates, as, for example best Australian beef at 20 sen for 100 *momme* (about 6½d. per lb.). The cost of a meal obtained from the factory cookhouse is 5 sen or 10 sen. There is also a barber's shop where the men cut each other's hair, paying a small fee for the loan of the clippers, a lending library for books and magazines, and a stock of umbrellas which are lent out in case of rain. I was informed that the workpeople are so happy that they never give any trouble, and the factory is in a position to compel a person seeking employment to undergo an intelligence test before being taken on. A hospital is also provided, with a staff of four doctors, including a military one; any kind of medical treatment can be obtained, there being special theatres for eyes, nose and ears, dentistry, and operations. The rate charged for a patient is Y.1.20 per day, which includes medicine, food, and attendance.

**Output, etc.**—The only materials purchased from outside are the various kinds of wool; the factory produces all its own yarn and tops. It was stated that the output in a normal day was about 3,330 linear yards.

### Tokyo Keori Kaisha

This company owns four mills, at Oimachi, Senju, Oji, and Nagoya, and I was taken to see the one at Oimachi. To speak first of the company as a whole, it is as usual a large, non-specialised, joint-stock enterprise, with a capital of about £2,000,000, at present financially weak, and three of the four mills are twenty-five years old, equipped with machinery, which, as it has been running twenty-two hours a day during most of this period with no particularly good supervision, is now in poor condition. The chief products are light worsteds of medium quality, low quality, "melton," army blankets, army cloth, flannel, plush, astrakhan, beaver, and carpets.



## Raw materials:—

1. Australian merino.
2. South African mohair.
3. China wool (for blankets and army cloth).

The whole company employs 5,000 workpeople, about one-third of them men, and it has 45,000 spindles and 980 looms.

The Oimachi Factory.—This factory turns out all the goods mentioned above, but none of the worsted yarn is made on the premises. The "meltons" are very low grade woollens, some of them with a worsted warp and some with a cotton warp. The ingredients are noils, rags, cotton, and low grade wool. At this mill all woolen processes are carried on.

Sorting.—I was not shown this department, but I gathered that the work there was of the rough-and-ready type.

Washing.—This is done by two machines of British manufacture.

Carding.—There are twenty-five woolen cards, five of American manufacture, the rest German.

Spinning.—This is done by twenty-four mule frames, all German. I was particularly struck by the inefficient and wasteful way in which it was being performed. Only low counts are spun (blanket yarns and heavy woollens).

Weaving.—The total number of looms is 280. Ten of these are jacquards, about twelve are for plush, etc., and most of the rest appeared to be ordinary broad looms for plain weaves. Practically all these machines were German.

Other Processes.—The finishing processes are continental, and most of the machinery in this department also is German. Plain dyeing for things like army blankets, is done on the premises.

Labor.—I was informed that men's wages were about Y.1.30 per day, and women's about Y.0.90, and that meals were sold on the premises at the rate of 10 sen for three meals. The factory employs 2,000 people, and of these 800 girls live within the compound. Conditions were fairly good, but some parts of the mill left something to be desired in the way of cleanliness.

## The Nippin Keori Kaisha

This company is by far the largest in Japan, having a capital of about £5,000,000 paid up and owning four large factories:—

1. At Gifu—entirely for muslins.
2. At Himeji—for muslin yarns.
3. At Inami—where the machinery is mostly German, bought up soon after the war; and
4. At Kakogawa—for muslins, all clases of worsteds and woollens.

These mills are the best managed in Japan, and the finances are very good. During the war dividends of 50 per cent. were paid, and since the war they have been 30 to 40 per cent. The total machinery owned by the company is as follows:

WORSTED.					
Cards	..	..	..	..	79
Noble combs..	..	..	..	..	9
Continental combs	..	..	..	..	150
Cap and ring spindles	..	..	..	..	19,000
Mule spindles	..	..	..	..	74,700
WOOLEN.					
Cards	..	..	..	..	65
Mule spindles	..	..	..	..	32,640

There are 771 broad looms and 972 narrow, or 1,743 in all. The workpeople number 10,000, 60 per cent. being females, and the average wages are: females Y.1.15 per day, males Y.2.10 per day.

The mill which I visited was the one at Kakogawa, and I was not a welcome visitor, and was shown as little as possible.

The Kakogawa factory covers a large area, and gives employment to about 5,000 people, and it has both a worsted and a woolen side. There are three washing and three drying machines, all of Japanese manufacture.

Worsted Branch.—There is no weaving of worsteds or spinning of muslin yarn at this factory, that work being carried out at Inami. The following are approximately the numbers of the machines: Cards (? German), 6 or 8; Noble combs, about 8; continental combs (Alsatian), a fair number; continental drawing (Alsatian), a fair number; cap and ring spinning, about 80 frames; mule spinning, about 25 frames.

## WOOLEN BRANCH.

Cards	..	..	..	..	23
Mule spinning (German)	..	..	..	..	25
Broad looms (German)	..	..	..	..	235
Jacquard looms (German)	..	..	..	..	15

The fabrics produced on this side are serges, some with cotton warp, and blankets.

Labor.—About 1,000 girls are accommodated on the premises, after the usual plan, but I did not see their quarters. The day on which I visited the factory was extremely hot, the atmosphere of the rooms was almost unbearable, the more so because the buildings are old and not well ventilated, and the operatives were obviously suffering very much.

## Mosurin Boshoka Kaisha, Osaka

This company owns four mills in the Osaka district—at Nakazu (the one I visited). Imazu (formerly operated by a separate company, the Toyo Keito), Tanouchi, and Tsukuda. The mill at Tsukuda, with 30,000 spindles, is a cotton mill, and therefore outside the scope of this investigation, but it is worth mentioning because this is not the only case of a cotton mill and a woolen, especially a muslin mill, being owned by the same company. The same thing has been pointed out in the case of the Toyo Muslin Company in Tokio, and I think there is some talk of the Kanegafuchi Spinning Company beginning the manufacture of mousseline de laine. The main reason for this combination would appear to be that the looms used in the manufacture of wool muslin are also suitable for making cotton tissues, and *vice versa*, so that according to the market demand they can be turned over from one use to the other very quickly.

Imazu Mill (formerly Toyo Keito Kaisha).—I was unable to visit this mill, but was given the following information about it:—

Its work is in two branches—(a) the manufacture of woolen yarn (counts 5's—48's)—mainly for knitted goods. This yarn is made from low-grade crossbred, and there are ten ring spinning frames (2,800 spindles). My informant stated that these frames were of Alsatian make. (b) The manufacture of muslin. For this there are two sets of French drawing and two sets of French combing. For spinning there are twenty-four mules (Alsatian), with 640 spindles each and the weaving department contains 540 narrow looms, largely British.

Nakazu Mill.—This mill was the object of my visit, and the officials whom I met did all they could to facilitate my inquiries. Contrary to the attitude in such companies, they did not regard my visit with suspicion, but said that they were glad to open their doors to foreign visitors. The building is twenty-five years old, and was planned by a Frenchman. The company's engineer told me that they were not satisfied with it as the roof was too low, the rooms were dismal, and consequently the temperature was about 3 deg. higher than at their Tanouchi factory—a serious consideration during an Osaka summer.

The principal product at this mill is muslin, but there are ten bunting looms, making bunting from crossbred yarn which is imported entirely from the United Kingdom.

Preliminary Processes.—The raw material is fine-grade Australian merino, which is roughly sorted before washing. There are two washing machines of American manufacture, and two Japanese-made drying machines. As the wool comes out of the drying machine it is treated with olive oil.

Carding, Combing, etc.—There are twenty-one cards (Alsatian). The slivers from these machines are not taken off separately, machine by machine, but the slivers of four or five machines are combined by mechanical means into one big sliver. The drawing and combing are entirely continental and consist of four sets each, to be increased in the near future to five sets each. All these machines are Alsatian.

Spinning.—All the spinning frames are mules, mostly Alsatian—i.e., forty-four machines—but there are also ten of British manufacture, making fifty-four altogether. The engineer told me that he personally preferred the British machine, and in the new factory at Tanouchi the proportion of such machines would be increased.

Weaving.—There are 1,050 narrow looms, practically all British. All the yarn except that for bunting is produced on the premises.

Other Processes.—There are three or four machines for preparing reeds and healds for the looms, and the firm does its own bleaching, but no dyeing. I was informed that the production was about 1,100,000 yards per month.

Labor.—At the time of my visit the working day was a single shift of eleven hours, including one hour for meals. There are 4,300 employees, mostly women and girls, and the average daily wage is about Y.1.50.

## Chuo Keito Boseki Kaisha, Ogaki

This company, which is largely controlled by Iwai & Co., with a capital of about £400,000, has just erected a spinning mill at



Ogaki, and it had not begun to produce at the time of my visit, though it was on the point of doing so. The mill is without doubt one of the very finest in the country, being very well built, and the rooms are lofty, light, and well ventilated. It is for the present confined to spinning and earlier processes, though it is expected that a weaving department will be added at a later date. The machinery has been supplied entirely by the Société Alsacienne de Constructions Mécaniques of Mülhouse, at a cost of £100,000, and French engineers were tuning the frames, etc., when I was there. The machines are as follows: Washing and drying, 1 each; cards, 16 sets; continental combs, 24 sets; French drawing, 2 sets; mule spinning (counts 40's to 70's), 12 frames, 7,560 spindles; ring spinning (counts 10's to 40's), 12 frames, 4,800 spindles; twisting, 6 frames; doubling, 5 frames.

It is intended to make muslin yarns partly from tops imported from the United Kingdom and Australia.

I was told that most of the girls were being brought from Kyushu and other country districts on a contract of two or three years, and the company was evidently determined to make the conditions as attractive as possible. I noticed that all the female operatives had been supplied with neat overalls, and great pride was taken in conducting me over the dormitories. Ten girls are accommodated in a room 18-ft. by 18-ft., and there are thirty-six such rooms per dormitory. The rooms are airy and clean, and I am told that they are a great improvement on the disgusting labor conditions which formerly obtained in Japan, and I have certainly seen none better in the course of these investigations. Such accommodation, however, would be regarded as overcrowding in England. It is only fair to add that there is ample provision for baths; there is a good dining-room, and a well-planned hospital and dispensary with a doctor in constant attendance. Provision is also made for such sport as the operatives care to indulge in after they have spent their ten or eleven hours in the factory.

The principal points of the foregoing may be briefly summarized as follows:

1. Owing to the earthquake disaster the Japanese woolen industry has suffered a set back which will give an additional opportunity to United Kingdom exporters of woolen goods to Japan (in so far as that is not counter-balanced by Japan's reduced purchasing power). It would be unwise to expect this effect to continue for more than three or four years, and it may not continue so long.

2. The Japanese industry has largely developed along continental rather than English lines. Nevertheless, there is a good opening for British textile machinery and for British tops, and in a smaller degree for British yarns.

3. In spite of the difficulty of training skilled workpeople, and the general lower standard of efficiency as compared with the British industry, it may be expected that the Japanese will be able in the course of a few years to meet practically all their own requirements as regards plain goods up to a fairly high quality but for a long time to come Japan will have to import fancy yarns and the highest class of woolen goods and, in a long view of the situation, the chief opportunity of the British exporter lies there.

4. Japan's demand for woollens has been increasing in the last few years at a more rapid rate than her woolen industry, otherwise the imports of woollens would have tended to diminish before now; but the British exporter should be prepared to find this tendency asserting itself more and more in the future.

5. The chief specialty of the Japanese woolen industry is wool muslin. This branch has reached a high stage of development, and Japan does not need to import this fabric at all, but she imports the machinery, and Great Britain can supply that machinery.

## Proposed Extension of the Water Supply of the Metropolitan District of Manila

(Continued from page 338.)

proposed Novaliches storage reservoir, and from this reservoir another tunnel 6 kilometres long, brings it to the proposed filter beds from which it will connect by means of pipe lines to the present system. A very large part of the first section of the tunnel will be in Andesite rock which will not need any timbering, and will probably not be lined with concrete, while the remainder of the first section and the whole of the second section, will go through adobe rock,

and all of it will have to be lined with concrete, and a good deal of it will have to be timbered.

The dimensions of the tunnel as per preliminary design are as follows:

Capacity, 80,000,000 gallons per day	
Height, finished .. .. .	6 feet
Width, finished .. .. .	5 "
Length about .. .. .	23.5 kilometres

*Storage Reservoir.*—The proposed storage reservoir is located at Novaliches, a distance of some 6 kilometres from our present tunnel line which brings the Montalban water to the city. It will consist of an earth dam about 100 feet high which will dam the Novaliches river and will form a storage basin containing 6,000,000,000 gallons of water, in the upper 20 feet layer of the basin. The lower part will probably contain half as much, but due to the elevations of the tunnels will not be available for use by the district. This storage reservoir will provide sufficient water for 120 days at the rate of 50,000,000 gallons per day, so that in case of an extraordinary low run off of the Angat river, there will be sufficient storage to tide over the dry season. It will also serve as a very large settling basin, in which sedimentation will purify the water, and due to its great depth, no danger of the growth of algae need be feared. It will also act as a compensating reservoir to store the water there during the rainy season, so that we will not have to take the whole flow of the Angat river during the dry season and so deprive the riparian right owners from their share of the water of the river.

Finally, as the Novaliches reservoir and the second section of the tunnel, above described, can be finished a couple of years before the whole project is finished, relief will be had by the district to get the additional supply that will be made available from the run off of the Novaliches river.

Several tentative designs were made for the earth, dam, but no decision has thus far been arrived as to whether the dam should have a concrete core wall, or a clay puddled core wall, or a concrete apron with a cut off wall, or a clay mattress in front of the dam to reduce seepage. In general the location for the dam is quite favorable, except for the considerable height needed. The foundations are satisfactory, and ample material is available for its economical construction.

The approximate dimensions are as follows:

Height .. .. .	100 feet
Slope-on both sides .. .. .	3 to 1 "
Length at crest about .. .. .	1,000 "
Width at crest .. .. .	20 "
Width of shelves .. .. .	20 "
Width at toe .. .. .	500 "

*Filters.*—The filters are proposed to be sand filters capable of filtering 20 to 25 million gallons per acre per day. This is rather an unusual amount for sand filters, but as the water is of very good quality and undergoes a great deal of sedimentation, and ultimately chlorination, the filtration may take place at a much more rapid rate than in the regular slow sand filters.

*Chlorination.*—A chlorination plant will be installed at the point where the water enters the distribution system. At the present time all the water is disinfected with calcium hypochlorite, as the chlorine gas method is all but prohibitive in cost, due to the transportation charges on the gas cylinders, and the return of same to the United States. But if chlorine gas could be obtained at a reasonable cost, the disinfection would be done with chlorine gas, as it is more effective and easier to control.

*Distribution System.*—About P.1,000,000 will be expended for the enlargement and extension of the distribution system, which will consist mainly of cast iron pipe construction, varying in size from 6-in. to 42-in., and will reinforce the present distribution system, and increase water pressure in the city to a minimum of 30 pounds.

*Sanitary Sewerage System.*—About P.1,000,000 will be expended for the extension of the sanitary sewerage system in the city of Manila, for the construction of several additional sewerage pumping stations, extension of sewerage pipe lines, and possibly the installation of a third pump in our present main sewerage pumping station and an additional 42-in. cast iron pipe outlet for a distance of some 6,000 feet into the bay of Manila.

All the work described as per project III including the distribution system and sewer extensions, can be built within the sum of the authorized P.12,000,000, including interest on the money and sinking fund charges during the period of construction.



# Proposed Extension of the Water Supply of the Metropolitan Water District of Manila

By A. Gideon, C.E.

(MEMBER OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS; MEMBER OF THE AMERICAN WATERWORKS ASSOCIATION, ETC. ETC.);  
MANAGER AND CHIEF ENGINEER

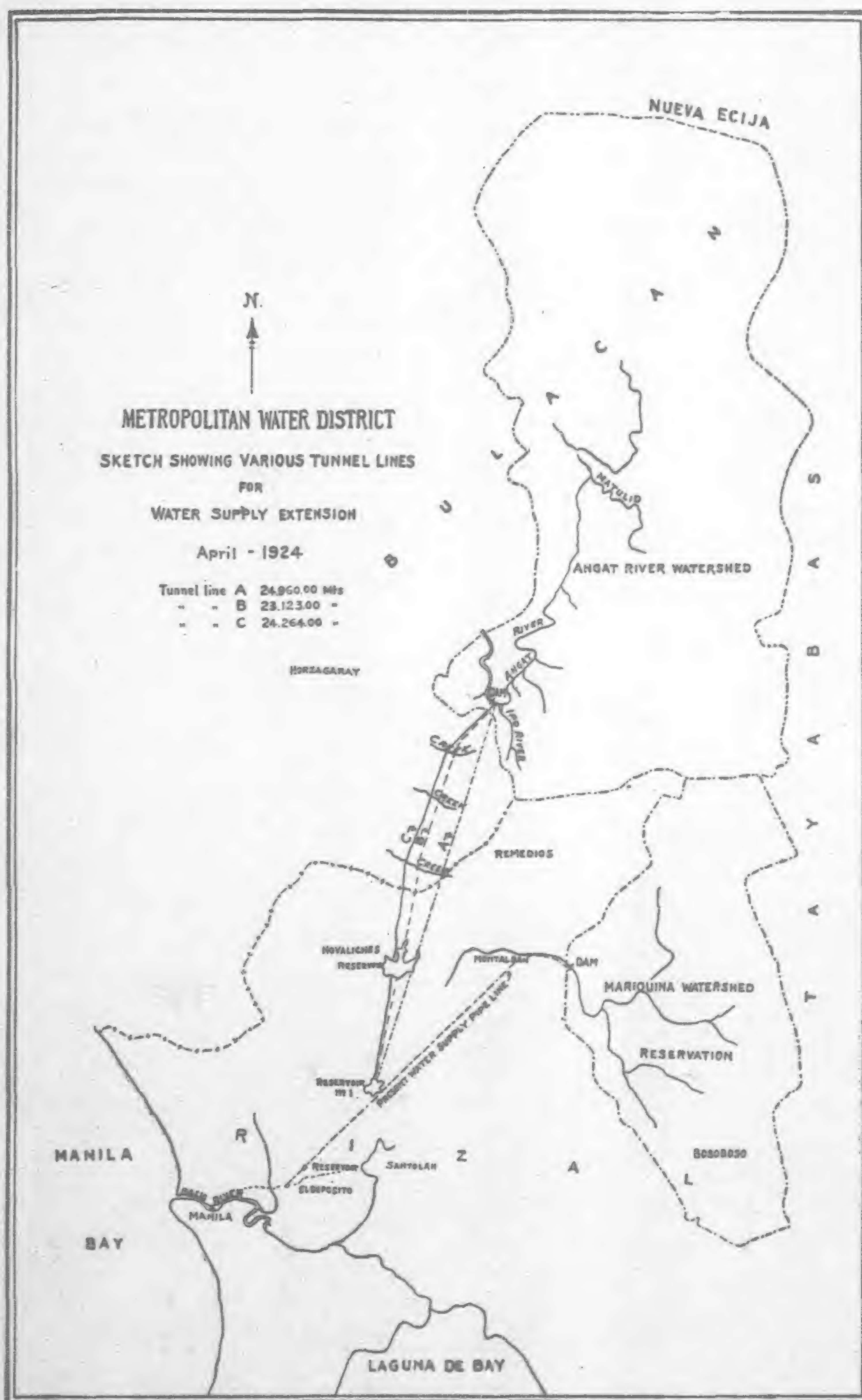
THE article published in Volume XIX, No. 5, for May 1923, of

THE FAR EASTERN REVIEW, entitled "Manila Water Supply," reviews the history and present conditions of the water supply. This article briefly reviews plans for the extension of the water supply of the the metropolitan water district of Manila.

The population of the city of Manila in 1903 was 216,000 and is at the present time a little over 300,000, and estimating the increase to continue at the same rate, Manila will have a population of 560,000 in 1950.

The amount of water available for all purposes in 1903 was about 28 gallons per capita per day, or a total of 6,000,000 gallons per day, which was supplied by the Santolan pumping station on the Mariquina river.

The extensions which were started in 1903 and completed in 1909, provided a gravity water supply from the Mariquina river, with the intake or head-works located about fifteen (15) miles above the Santolan pumping station. The capacity of the pipe line was 21,500,000 gallons per day, thus providing for an estimated population of 300,000 at 70 gallons per capita per day for 1923. However no storage was provided to carry over the city during the low



run off of the river, and as the run off of the river is very much reduced during the dry season, we have had to resort to the Santolan pumping station, to augment the supply every dry season since 1912.

The per capita consumption likewise continued to increase every year, so that in 1923, the per capita consumption was 75 gallons per day, and more could be used if it were available, there being many days during which the consumption was as high as 25,000,000 gallons per day, or 83 gallons per capita per day. It was therefore evident some years ago, that due to the rapid increase in the population, and the more rapid increase in the per capita consumption, the present supply would soon be inadequate to the demand, and studies were made, not only of the engineering features, as to how to increase the supply, but also as to how to finance the required extensions in the best and easiest way, and to so manage the water supply that it would be a self-supporting institution.

The city of Manila, —then administering the water supply, was bonded for P.8,000,000 for sewer and water-works bonds, or the full extent of its borrowing capacity, and needed considerable funds for financing the many other urgent demands for





Two Views of Pared Dam Site where a Dam 270 feet High was Planned but the Project was Later Abandoned

improvements, such as new schools, improved roadways, etc. etc., and if the water supply and sewers could be made self-maintaining the city of Manila would be relieved of the burden of financing the water supply, and if due to the city's growth in population and wealth, its borrowing capacity was increased, it could issue bonds for other urgently needed improvements.

It was accordingly recommended to the legislature, that a metropolitan water district be created, to consist of the city of Manila, its suburbs and a number of towns along the pipe line. The legislature authorized the creation of the district, and also authorized the district to borrow P.12,000,000 Philippine currency or \$6,000,000 United States currency in addition to assuming the present \$4,000,000 United States currency indebtedness of the sewer and waterworks bonds.

Upon the organization of the metropolitan water district measures were taken to determine a feasible and economical way to carry out the needed extensions.

Three different major projects were studied, to determine which one would be the best adapted for the district needs. Due to the fact that a very considerable investment was already had in the present plant, the first investigations and studies made were along the lines of extending and developing the present source of the water supply on the Mariquina river. The studies made showed that we could develop the present source to furnish a maximum of 50,000,000 gallons per day by building two high dams upstream from the present Montalban dam and the necessary pipe lines to deliver the water to the city. The estimates based upon these studies showed, however, that the work would cost about P.3,500,000 more than the amount we were authorized to borrow, besides the line would be very complicated, and would require constant

expert vigilance in operation, and some of the works such as the steel pipe lines would be good for about 20 or 30 years only, as due to probable oxidation, electrolysis, etc., they would have to be renewed from time to time.

As there was an impression that a hydro-electric plant could be built together with the water supply extension, the law creating the metropolitan water district authorized the district to engage in hydro-electric development in addition to its other functions, and accordingly the second project investigated was the development of the Angat river for both a domestic water supply and hydro-electric power.

The Angat river has a watershed of 275 square miles, and is but 35 kilometres or 22 miles north of Manila in a straight line. The watershed above the proposed intake, is very rugged and sparsely inhabited and for the most part covered with forests. The rainfall on the watershed is very heavy, averaging over 100 inches per annum, so that the total river run off is very considerable.

The water was analyzed for a period of one year to determine its variation with the climatic condition, and was found uniformly satisfactory for domestic purposes—both from the chemical and bacteriological standpoint. In fact it is somewhat better than the present supply which is also of a very high quality. The gaging of the river was intermittently carried on by the bureau of public works for several years, to determine the run off of the river. There was no question but that the run off would suffice for the domestic needs of the metropolitan water district during the rainy season, and even, during the most of the months of low river run off. Due to the sharp division between the rainy season and the dry season and the considerable length of the dry season, the rivers in this vicinity have a very low dry season discharge, which has an



Site for Earth Dam to form Storage Reservoir 100 feet deep on Novaliches River



Drilling Force Hauling Rock Drill up Hillside to Test Rock at New Dam Site



important bearing on the amount of storage to be provided. The hydrographs of the river showed that the minimum monthly discharge during the period of the river gauging was of an average of 80,000,000 gallons per day, or just sufficient for our ultimate needs for a domestic water supply 50 years hence or about the year 1975. So that this source was in every way satisfactory for a domestic water supply.

However, for power purposes vastly greater amounts of water are needed, so that while there was no doubt that sufficient water would be available in the rainy season, yet to make a hydro-electric plant a financial success, power must be available the whole year round. Due to the ruggedness of the country, no really good sites are available for storage reservoirs where cheap storage could be combined with safety of structures.

Several sites were investigated and one at Pared was studied in detail. This site was in a narrow canyon and by building a dam 270 feet high, sufficient water could be impounded to develop a maximum of 17,500 K.W. of which 3,350 K.W. would be primary, or available throughout the year, and for four months per year we could deliver 12,650 K.W. additional power.

The total cost of the work was estimated to cost P.36,000,000, and deducting the P.12,000,000 for the cost of the water supply, would leave the cost of the hydro-electric development at P.24,000,000. The income, however, from the sale of power would not be sufficient to pay expenses for the additional outlay. Besides difficulty was encountered to provide spillways at the dam site, and the design provided spillways in tunnels which were costly, and all but impracticable, as the water in the tunnels would develop a velocity of 50 feet per second, and probably cut away the rock. A dam 270 feet high in a tropical country subject to earthquakes was not a very desirable feature.

Accordingly the third project was adopted, i.e., the construction of a water supply extension only with its source at Ipo on the Angat river. The project is very simple, and with very little care will last indefinitely. It consists of a masonry dam at the intake, a tunnel to a storage reservoir, a storage reservoir, and another tunnel connecting the proposed extensions to the present water supply mains, together with filter beds, chlorination plant and possibly aeration.

**Dam.**—The dam will be a spillway dam of the Ogee type, located at Ipo on the Angat river, just below its confluence with the Ipo river. The river widens out at this location, thus providing sufficient spillway capacity over the crest of the dam, and as in flood stage the river is likely to carry over 200,000 cubic feet per second, the provision of a capacious spillway is imperative. The rapids in the river at this point indicate that good foundations will be available at an economical cost. The borings made at this place indicate that the Andesite rock in the vicinity is sound, and besides affording good foundations will supply good building material for the construction of the dam and its appurtenances.

The design of the dam is extra massive as it may have to carry a depth of 30 feet over its spillway. The fact that it is located in a country subject to occasional earthquakes could also not be lost



Chief Engineer Inspecting Possible Dam Sites and Shooting the Rapids on a Bamboo Raft

sight of. The width of the river would facilitate construction as the coffer dams can be built at reasonable cost. The following are the dimensions of the dam as per preliminary design :—

Height of dam above river bed	..	..	56 feet
Estimated depth of foundations	..	..	10 "
Total estimated height of dam	..	..	66 "
Length of dam at top	..	..	500 "
Length of dam at river bed	..	..	262 "
Width of dam at top	..	..	20 "

**Tunnels.**—From the intake at the dam, the water is carried by a tunnel of a capacity of 80,000,000 gallons per day, or about 125 cubic feet per second, for a distance of some 17 kilometres to the

(Continued on page 335.)



Hospitable Country Folk Afford Engineers a Welcome Rest on the Trail



Junction of Ipo and Angat Rivers Finally Chosen as Site for the Dam





General View of the Tientsin Native City Waterworks Plant

## Tientsin's Water Supply

THE Tientsin water supply was established in 1897 by a private company with an authorized capital of Tls. 200,000 using the water from the Haiho River. With the rapid growth of the British concession, however, the company failed to keep step and when its franchise expired in May, 1922, it was taken over by the council and operated as a municipal enterprise.

The intake pumps are three steam engined centrifugal pumps, each of a normal capacity of 1,000 gallons per minute. The maximum capacity of the intake is 60,000 gallons an hour, one pump working, the other standing by.

The normal outflow duty of the plant is 45,000 gallons per hour, maximum 60,000, at a pumping pressure of  $37\frac{1}{2}$  pounds per square inch, one pump always kept in reserve. In addition to the power outflow the water tower, ninety feet high, has a capacity of 22,000 gallons, but is now used only as a standpipe. There is also an emergency "Booster" pump, driven by electric motor, which can increase the water pressure in the mains to 50 pounds per square inch. This booster is turned on at the heavy "draw-off" periods of the day, at present between 7 and 10 a.m., and whenever fires break out in the concession.

### Public Water Supply Problem

One of the largest problems facing the British municipal council is the provision of water to the community, and in view of the many disadvantages of using river water, the possibilities obtaining water from artesian wells are to be tested. It can readily be understood that the chief trouble is the presence of suspended matter in water from the Haiho River, whence the waterworks obtains its supply. According to minute data drawn up by the Haiho river conservancy the quantity of suspended matter in the water varies with the season, being low in winter, when the current is slow, and high in spring and summer when thaw and rain bring freshets and, because of them, large amounts of silt and free soil. The matter in suspense accordingly varies from two to thirteen pounds to the cubic metre at the



Tientsin Native City Waterworks: Top, Boiler House and Chimney; Bottom, Engine House

The waterworks plant is situated on about twenty *mow* of ground near the centre of the old concessions, Parkes, Gordon and Davenport roads. It draws water from intakes in the Haiho River at a present normal rate of 750,000 gallons daily, with a maximum capacity of 1,000,000 gallons. During the past year the maximum daily intake was 818,000 gallons on September 13, while the minimum fell well below the normal figure. The present normal rate of output is also 750,000 gallons with the same maximum capacity of 1,000,000 gallons. The highest maximum daily output for the past year was 673,000 gallons on May 30. The pumping plant is capable of still higher capacities, approximating 1,500,000 gallons. The plant includes three settling tanks, each of a capacity of 200,000 gallons, and one of 99,000 gallons, a sedimentation basin of 500,000 gallons capacity and nine filters with total surface area of nearly 14,000 square feet. There is also an important reserve filtered water storage tank with a capacity of 500,000 gallons, always kept full for eventualities. The pumping machinery consists of three Worthington steam pumps, two of 750 and one of 500 gallons per minute capacity, two Mumford pumps, each 250 gallons capacity, one Babcock and three Cochrane marine type boilers.

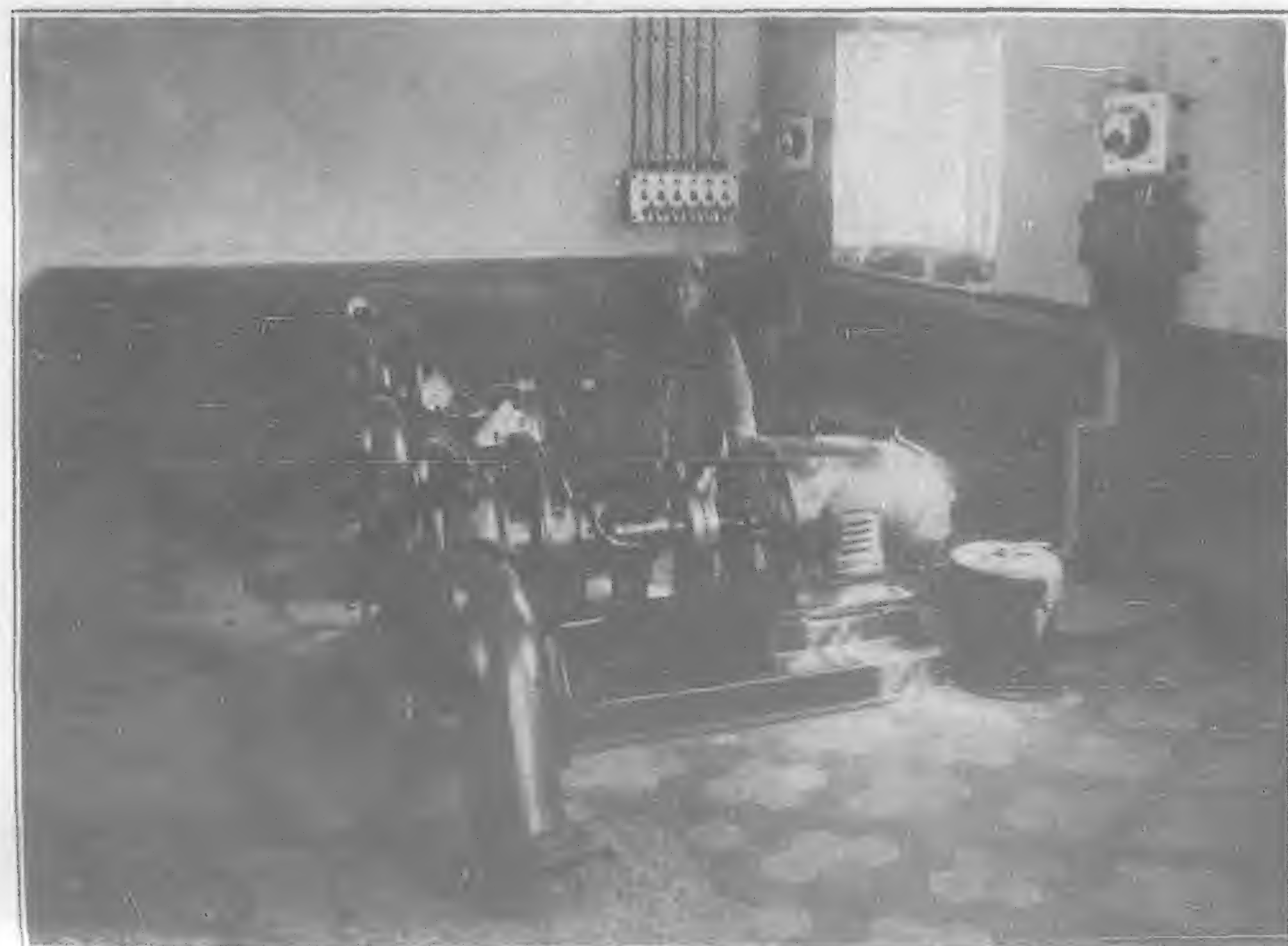




Part of High Lift Pumping Machinery



Raw Water Pumping Machinery



Electrical High Lift Pumps



Filters

TIENTSIN NATIVE CITY WATERWORKS PLANT





Tientsin Native City Waterworks: Sedimentation Basins

surface and from five to twenty pounds to the cubic metre at the bottom. The waterworks, however, must always be prepared to deal with the highest quantities, a problem which becomes increasingly difficult by reason of the greatest demands on the plant coming when the water is at its worst.

Water is pumped from the river direct into huge settling tanks, referred to above, where it remains twelve hours to give it time to allow a settlement of a large part of its muddy burden, and to be disinfected with a solution of chloride of lime. Thence it is turned into the sedimentation basin and subsequently let into the filter beds. The filter is a layer of sand and gravel, the former two and a half feet thick, the latter six inches thick. The filter is frequently cleaned out and was entirely relaid last summer, a process which required the handling of two thousand, four hundred tons of sand and gravel. The difficulties of maintaining a pure water supply, under the circumstances, are too many and too varied to be detailed here, but they have been met and successfully overcome by the council in all except the most extraordinary situations. Such an exception was met three summers ago by a remarkably low water level in the river permitting the water to be permeated with a disagreeable effluent from native jute washing operations further up the river. In spite of the treatment and filtering water reached consumers in a discoloured and odorous condition.

### Artesian Wells to be Tested

In view of these obstacles in the way of obtaining the purest water supply under all conditions the council has determined to test the possibilities of getting a public water supply from artesian tube wells. To this end they had a well bored in the grounds of the waterworks. Boring of a 12-in. tube well commenced in August 1923 and in November reached a depth of 250 feet, where a likely stratum of fine sand was reached. However, to be on the safe side, the well was deepened to 280 feet, where more suitable sand was discovered. Hand pumps being inadequate for a serious test, the waterworks installed a temporary, electrically driven pump. A comparative estimate, made recently, credits the well with a possible capacity of more than 200,000 gallons a day. Water from similar wells analysed by experts, is found to be bacteriologically pure, and although "hard" it is decidedly more suitable than river water for domestic supply. What the outcome will be of the lengthy tests planned for this well remains to be seen. It will take possibly several months to determine whether or not its water will be affected by surface seepage, and if its estimated capacity can be

maintained. The results will be watched with great interest by all who have studied the prime question of pure water supply, possibly the greatest problem of communities in China. If this source of supply is found satisfactory the British municipal council will have made a remarkable step forward in the growth of Tientsin and at the same time will have contributed immeasurably to the health of both this and other concessions in this country.

The development of the waterworks keeps pace with the rest of the settlement, although the demands on it have been reduced by the severance of the French concession, which now obtains its supply from the Tientsin native city waterworks. The change took place at the end of June last year and in October 1922 the ex-German concession, hitherto supplied individually, was placed on bulk supply. The three mains leading into that concession were cut, valves and metres inserted and the supply charged direct to the administration of the ex-German concession, which makes its own arrangements with individual consumers. The growth of demand in the British concession areas is principally due to the council's compulsory sanitation, and to a large extent the development of the extra mural area. At the end of 1922 there were 574 consumers on the mains, whereas to date, in less than a year, there are 717. The past working year of the waterworks has been devoted mainly to reorganization of the old company's plant, repairs and maintenance. However, there have been several noteworthy advances, 3,000 feet of new cast iron 6-in. mains have been laid in Liscum, Parkes and Seymour roads, replacing the old steel 4-in. mains in the latter road. In regard to the Seymour Road main the waterworks achieved the remarkable record of laying more than 450 feet of 6-in. main, removing a still longer 4-in. main, inserting hydrant and stop valve all in the space of 25 working hours without interruption of service to consumers. This incident is worthy of note illustrating, as it does, the modern methods and progressive development of the waterworks under municipal control. It is a significant indication of the advance of this concession.

### Weitze Creek Lock and Pumping Scheme

Following the floods in 1917 the need to ensure more effectively the proper drainage of the concession was considered extremely pressing. Passing as it does diagonally north and south through the approximate centre of the Japanese, French and British concessions, the Weitze creek, a tidal waterway, forms a most desirable means to that end. Passing on through the northern end of the ex-German concession the creek enters the Haiho river, but its



Tientsin Native City Waterworks: Underground Clean Water Reservoirs Surrounded by Filterbeds (roofed)



waters are controlled at the mouth by a lock gate, which enables its waters to be maintained at a desired level. In considering this idea of using it and improving its features as a drainage for flood, storm and effluent waters, the Chihli river commission were first approached to see if they would undertake the matter in connection with the flood relief bureau. This suggestion, however, was not accepted and in 1918 the British, French, Japanese and ex-German concession municipalities decided jointly to carry out a scheme whereby the concession areas would be drained into the creek and a pumping installation erected at the Haiho end of the creek. The pumps were to control the water level and permit frequent flushing to maintain thorough cleansing. At a meeting of representatives of the several councils it was decided that the capital outlay would be shared in proportion to the area drained in each concession, and that the subsequent running expenses would be borne in equal parts. The matter was then investigated further with the assistance of experts and considerable correspondence entered into with the Chinese authorities. The outcome of this was the decision, in 1920, of the Civil Governor, Tsao Jui, to permit the committee of representatives of the four areas to control the whole scheme, and to purchase the necessary pumping installation. The original capacity of the machinery was increased, the deepening of the creek entered upon and the pumping plant finally received and erected ready for use last summer. In the meantime the erection of another lock at the Haikwanssu end of the creek was found necessary in order to shut off tributary waters and enable the creek to be pumped out, an operation which would require, with the pumping capacity, a mere three hours. It could then be automatically flushed by opening the lock gate at the river end. The Haikwanssu lock was constructed and everything made ready to commence last summer with an official trial. The concessions' drainage was diverted into the creek over the intervening period and the creek

excavated to the required depth. However, no official trial took place, owing to the question of control of both locks, and the matter is now at a deadlock. The machinery and locks, costing Taels 160,000 are idle, the creek is becoming offensive to the smell and householders in the vicinity are becoming impatient.

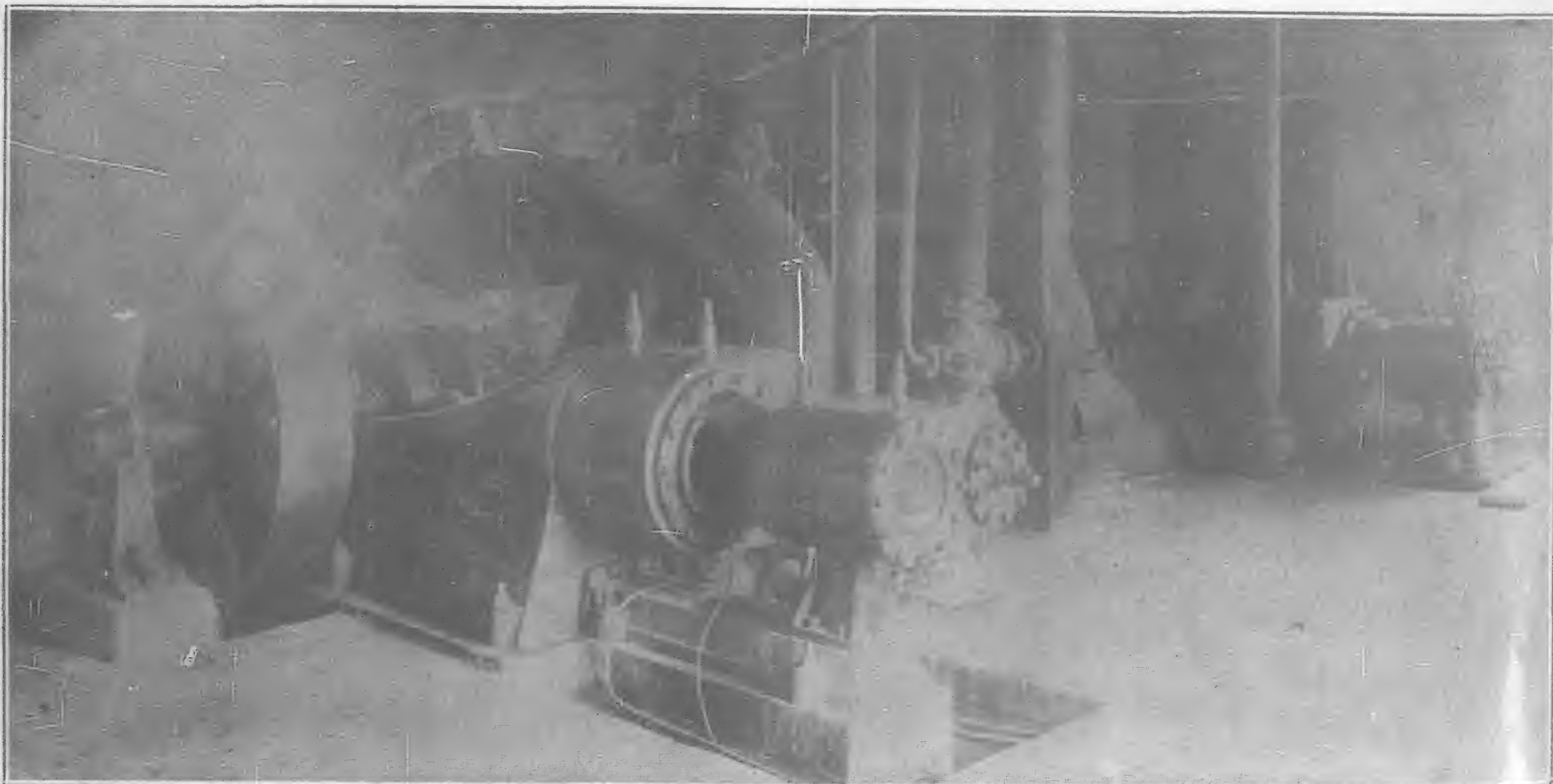
Thus, one of the most comprehensive and far-sighted schemes undertaken and accomplished by the British and other concessions in co-operation, is awaiting its final consummation. The extent of the plan can best be gauged by the effectiveness of its machinery, for the pumps are capable of emptying ten million gallons of water in three hours.

### Tientsin Native City Waterworks Company

For the Chinese city as well as the French, Russian, Italian, Japanese and ex-Austrian concessions at Tientsin, the water is supplied by the Tientsin Native City Waterworks Company, Ltd. This company was established in 1901 with a capital of Tls. 1,500,000 and has debentures of Tls. 200,000 outstanding. This plant is undoubtedly one of the largest and best equipped in China, serving a population of 810,000 in the Chinese city alone. It has a maximum intake capacity of six million gallons a day and a maximum filtered

water output capacity of four and a half millions, with a present normal output of three million gallons. The largest quantity supplied on one day in 1923 was on July 2, the output reaching the total of three million five hundred thousand gallons. The maximum pumping capacity of the entire plant is six million gallons a day, with a normal capacity of four and a half millions. There are twelve settling tanks of a combined capacity of two million gallons, two sedimentation basins of four million gallons combined capacity, thirty-one filters of a total capacity of four and a half millions and two reserve filtered water tanks containing a constant capacity of one and a half million gallons.

(Continued on page 323.)



The Original Pumping Station of the Tientsin Municipal Waterworks: Equipped with Pumping Machinery from the Kawasaki Dockyard Co., Ltd., of Kobe, Japan





Plant of the Manila Electric Company showing Coal Handling Machinery and Storage Yard

# Manila Electric Company

## New Investments Show Faith in Philippines

**T**HE Manila Electric Company is one of the pioneer American enterprises in the Philippines, and represents the largest single investment of American capital in the islands. In 1903 Mr. Charles M. Swift obtained a fifty-year franchise from the city of Manila for the operation of an electric street car system and the sale of electric light and power. At this time the "Compania de Tranvias de Filipinas" operated a line of horse-drawn cars through certain sections of the city, and "Compañia La Electricista" operated an electric plant of 1,000 H.P. capacity.

Mr. Swift transferred his franchise to the Manila Electric Railroad and Light Company which then purchased the "Compania de Tranvias" and later acquired the "La Electricista" interests. In 1921 the Manila Electric Railroad and Light Company was incorporated under the laws of the Philippine Islands and the name changed to Manila Electric Company. Construction of the street railway and power plant was commenced in 1904, and both were put in operation in 1905. Since that time the company has consistently kept pace with modern practices and has never hesitated to give the public the benefit of the introduction of most modern machinery and appliances.

### Power Plant

The original plant was completed in 1905 with a total generating capacity of 2,250 K.W., which was gradually increased to 10,500 K.W. in 1915. During 1920-22, two old units were replaced with two 5,000 K.W. Westinghouse turbo generators, which increased the capacity of the plant to 17,500 K.W. At the same time the hand-fired boilers were revamped and stokerized, increasing the boiler capacity 50 per cent.

At the present writing an additional plant is being constructed which will contain a 12,500 K.W. Allis Chalmers unit. This will arrive in July and will be in operation by October. The new plant is being constructed so that it can be extended to take three more units of this type, the installation of which will depend on the demand and the rate of deterioration in efficiency of the present machines.

The present primary voltage is 3,400, 60-cycle, two-phase, but with the installation of the new unit and completion of new trans-

mission line this will be changed to 13,000 volts, 60-cycle, 3-phase, which will be stepped down to 3,400 at 5 sub-stations. Current is delivered to the consumer at 220 volts.

The power plant is situated on an island bounded by an estero and the Pasig River, from which the condensing water is obtained. Semi-anthracite coal from Indo-China is delivered alongside in barges and handled on to the storage pile with Brown hoist and traveling crane. A drag line scraper then delivers to the conveyer which dumps into storage hopper and thence to furnaces. The chief engineer, watch engineers, and boiler room foremen are all Americans, the remainder of the operating force consisting of Filipinos.

The number of electric service customers has increased from 3,478 in 1906 to 42,126 in 1923, and the present rate of increase is approximately 6,000 per year. The plant output has increased from 8,000,000 kilowatt hours in 1906 to 55,000,000 kilowatt hours in 1923. In spite of the higher cost of coal and other materials as compared to United States prices, the company has reduced its electric rates 25 per cent. and they are now on a par with the average steam generating stations in the states.

### Track and Transportation

The company operates 148 passenger cars and 13 work cars over 52 miles of track throughout Manila and its environs serving a population of 385,000 people. Track is standard 4-ft. 8½-in. gauge and modern standard electrical equipment is used on rolling stock with 550 D.C. trolley voltage.

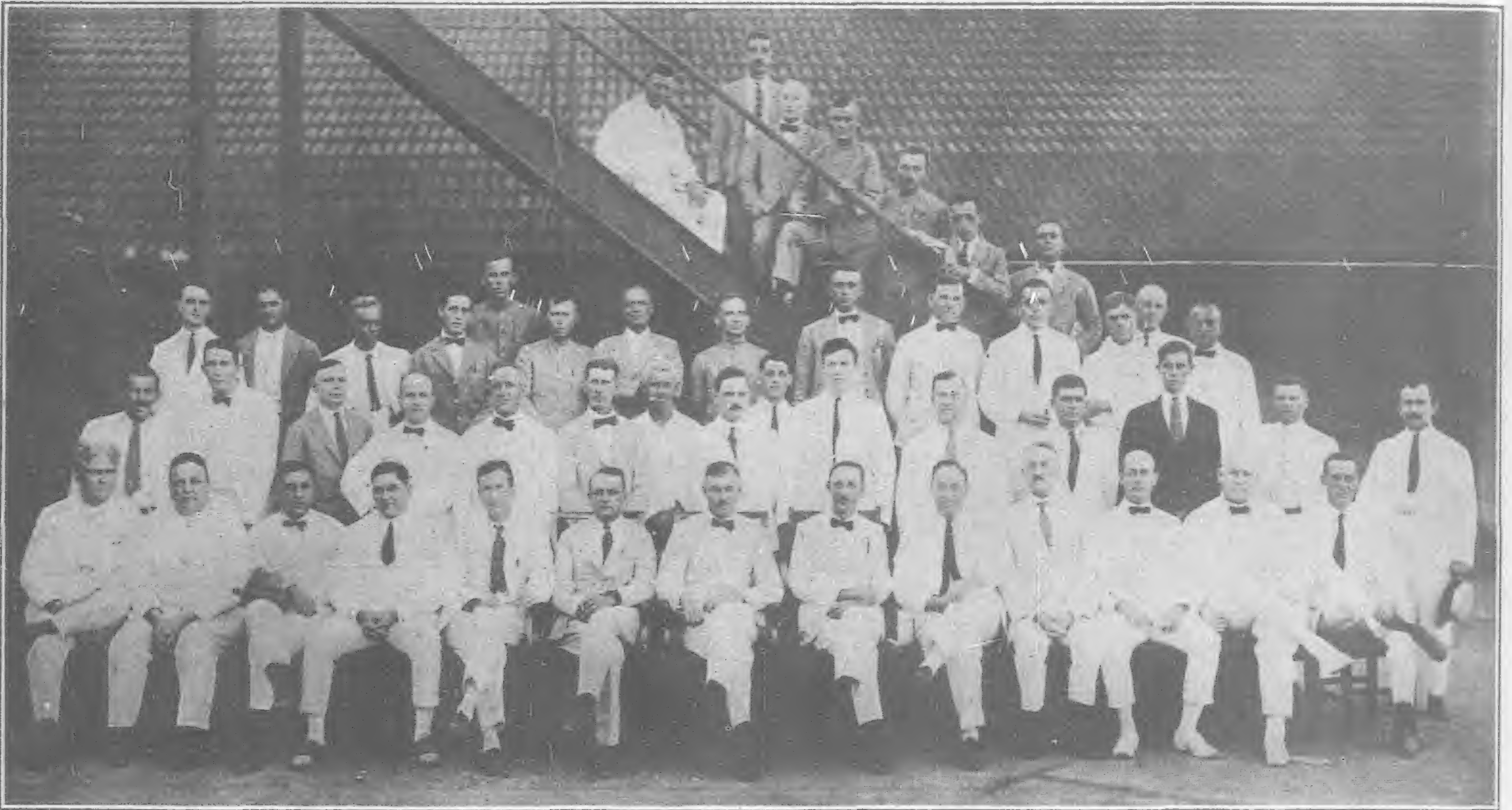
Reconstruction of the old tramway tracks was started in 1904 using 5-in. T rail and 7-in. girder. Very little ballast was used and girder rail was laid in concrete on 9-ft. tie centres. In 1920 an extensive track reconstruction program was projected which is now nearing completion.

Since a large part of Manila is below tide water and the rainy season protracted, proper track drainage in most places is impossible. To compensate for this a sub-base of 13-in. of compactly rolled cinders is used under 3-in. of rock ballast. Seven inch 80-pound T rail is the standard laid on 2½-ft. tie centres. A 30-in. angle is placed under each joint and joint plates electrically welded to the rail. With the completion of this track program the Company will have increased its track mileage 25 per cent.



J. H. Pardee, President of the J. G. White Management Corporation, operating the Manila Electric Company





MEMBERS OF FOREIGN STAFF, MANILA ELECTRIC COMPANY

*1st Row, seated, left to right:* W. J. Manion, Purchasing Agent; W. A. Seton, Supt. Transportation; J. A. Thomas, Supt. Shops; J. N. Weaver, Asst. Supt. Elec. Dept.; W. H. Rudisill, Supt. Engineering; G. E. Schreiber, Construction Supt.; R. W. Spofford, General Manager; H. P. L. Jollye, Auditor; M. Toby, Engineer, Maintenance of Way; W. G. Cords, Advertising Agent; A. B. Tigh, Sec. to General Manager; H. A. Fraser, Acting Chief Engineer; F. C. Swan, Supt. Distribution Dept. *2nd Row:* B. W. Brooks, R. B. Wright, H. B. Smith, C. H. Underwood, J. A. Foote, E. R. Hartske, C. G. Johnson, M. M. Myser, R. E. Stough, G. W. Barkas, Jr., C. A. Massell, Orlie Jackson, I. Sexton, Gil Montes. *3rd Row:* C. K. Cook, R. E. Brooks, F. Hollin, F. Roberts, W. W. Dodge, H. P. Tinsley, Harry Hall, A. Filer, S. G. Green, I. Figley, E. J. Deymek, M. J. Walsh, Carl Peterson, N. Tranfaglia, A. Richter. *On Stairs:* H. E. Bures, Geo. Morris, J. O. Nicholas, C. R. Leach, J. F. Bagdanske, J. A. Abad, A. Maio.

To replace old rolling stock and equipment and with the ultimate view of standardization, the company has designed a light weight centre entrance car to seat 56 passengers. Necessary steel and equipment have been received from the states and 20 of these cars will be fabricated in the company's shops this year.

When electrical operation was inaugurated all cars were manned by Americans as there was some doubt as to the ability of the Filipinos to handle this equipment both from a physical and psychological standpoint. However, with proper training, they proved so adaptable that all American platform men were replaced with Filipinos within two years. At present there are about 600 Filipinos

in the transportation department supervised by a staff of six Americans.

By a provision in the franchise, first and second class passengers must be segregated. In the "Days of the Empire" it was a rarity to see a Filipino in the first class section while now approximately only 5 per cent. of the first class passengers are foreigners. The P. A. Y. E. system has been introduced and each passenger is handed a combination fare receipt and transfer on payment of fare. This must be presented to inspectors who board cars at various points and whose duty it is to see that each passenger has a receipt. These inspectors also see to the punching of transfers as requested. Should a transfer not be desired, then this portion of the slip is torn off and fare receipt returned to the passenger. These



BOILER PLANT OF THE MANILA ELECTRIC COMPANY  
Hand Fired Boilers, Original Plant



Present Stoker Installation









Latest type "Pay as You Enter" Car

receipts are numbered serially and the conductors turn-in is checked against their issue.

Ten and one-half million passengers were carried in 1906 as against 33½ million in 1923 and car mileage has practically doubled.

### Shops

Being so far away from the base of supplies, the company must necessarily be to a great extent self-supporting. Adequate repair facilities and machinery are of the first importance for continuous service, and to this end the shops have been most completely equipped, including blast furnace and foundry. Electric welding has been successfully introduced and a very considerable saving is effected by this method in salvaging broken parts and building up worn wheel flanges. The shop force numbers 170 men all of whom are Filipinos with the exception of 17 Japanese carpenters who are employed on the higher classes of wood work.

### Accounting Department

The work of this department is necessarily voluminous and is efficiently handled by a force of 187 Filipinos supervised by a foreign staff of six men.



Car Repair and Assembly Shop

### Personnel

The company has been eminently successful in obtaining and retaining the loyalty of its 2,000 Filipino employees. Good wages are paid them and their health and general welfare carefully looked after by the company's doctor. The "Meralco" baseball team has won the league pennant several times and nine of its players were picked for the squad which represented the Philippines in the Far Eastern Olympiad at Osaka in 1923. A Christmas celebration is given every year at which every employee receives a present from the company.

The company's belief in the future of Manila is evidenced by the fact that \$5,000,000 has been added to property account during the last ten years. This

will be further increased by \$2,250,000, when the new plant, track program and car building program are completed. The company's bonded indebtedness is less than half the physical appraisal of the property.

The company is under the operation of The J. G. White Management Corporation, 43 Exchange Place, New York, of which J. H. Pardee is president. The local officials are: J. C. Rockwell, vice-president and R. W. Spofford, general manager.



Car Barns and General Offices



Car Storage Yard



# The Shuang-Chiao Wireless Station

Mitsui Bussan Kaisha Installation Now Ready for Operation After Overcoming Serious Engineering Difficulties

**T**HE largest radio station in the Far East has been installed by the Mitsui Bussan Kaisha at Shuang Chiao near Peking, is now ready for operation and is remarkable in that it successfully violates some of the preconceived theories of radio engineers without lessening the efficiency or transmission radius of the

plant. The plant is the outcome of a contract signed between the Chinese government and the Mitsui firm in February 1918, but the original design, owing to many improvements in radio apparatus, has had to be revised several times from the original scheme as proposed by a Danish engineer. Many difficulties in obtaining necessary structural materials for the construction of the masts were finally surmounted by the energy of the contractors who were hampered in considerable degree by the opposition created by their desire to change the original plans to give China the best possible radio installation for the money to be expended.

In the first place, Peking has no power plant to deliver the requisite amount of energy to the station, so the contractors decided to put in a turbine engine directly coupled to the high frequency generator. Immediately a storm of criticism arose from radio experts who pointed out the difficulty of changing the frequency of the current to give the desired wave lengths. They said that no directly coupled turbine plant possibly could have the flexibility required for such changes as were assumed to be needed by the station as it was to be a link between China and America and Europe, to say nothing of the nearer receivers such as steamer installations and others throughout the Far East using various wave lengths. This problem has been

solved so successfully that the new station does not interfere in the slightest with others when transmitting at wave lengths differing but little from those of other radio plants.

No high frequency generators of such a capacity then existed. The capacity of the Alexanderson's generators, to which type the M. B. K. generators belong, was limited to 200 K. W. and larger

ones were deemed impracticable by the original maker. Thus it was thought it would be quite impossible to manufacture a larger one in Japan, where engineering facilities were made light of without realizing what rapid progress had been made in recent years. Now there is no scope for discussion as whether 500 K.W. high frequency generators of this type are practicable or not, for they do exist in this station and are working successfully. Speed control has been so successfully surmounted that the regulator works to the thousandth without difficulty.

The important advantages of the new system can be summarized as follow:

1. That the operator can easily change the speed of the turbine to produce the most convenient wave length for communicating purposes.

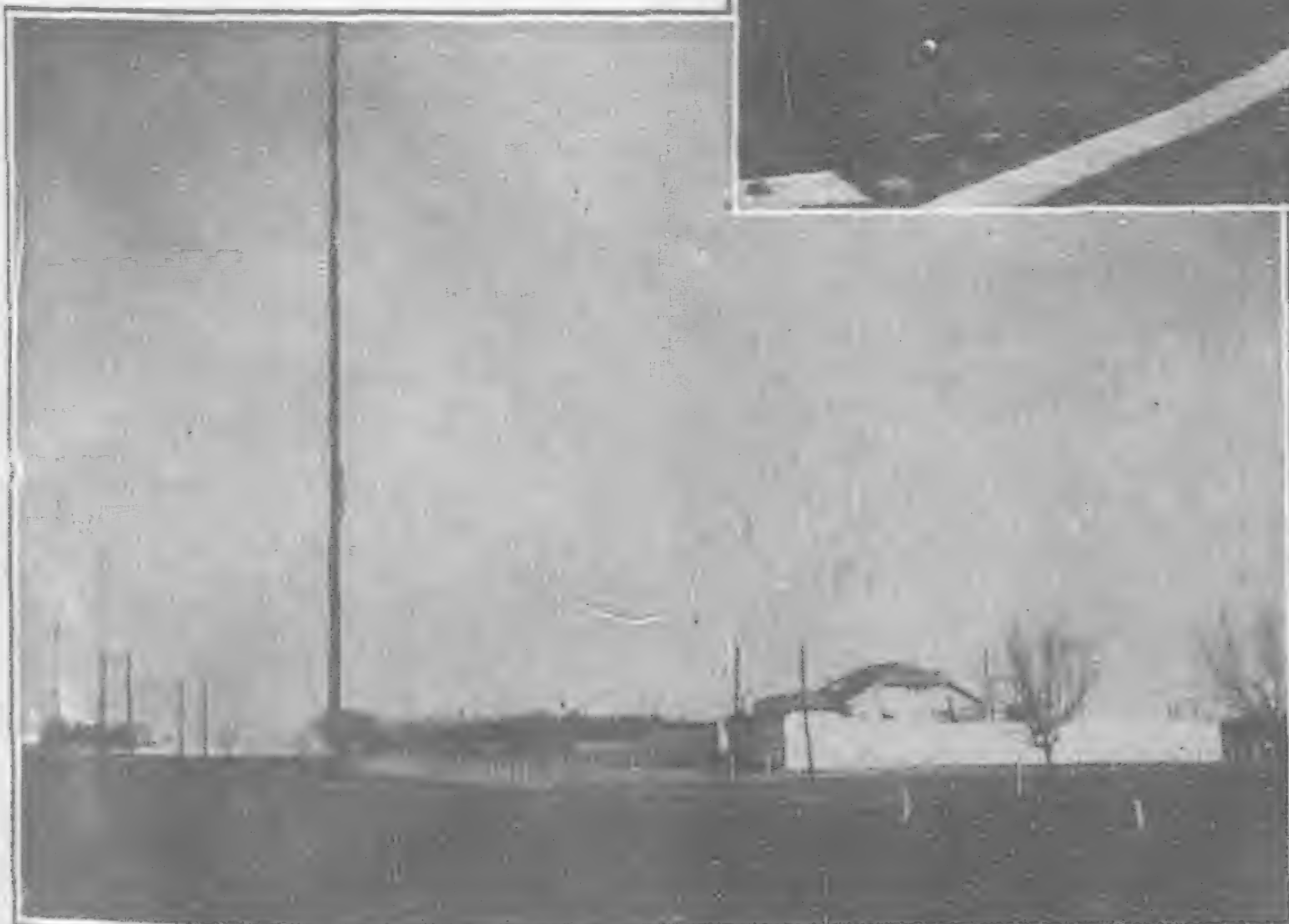
2. That it reduces the coal consumption for the reason that there are no superfluous machines to be used, either as generators or motors for power source, which naturally lower the efficiency.

3. That it saves expense in construction and of maintenance by reducing the number of machines.

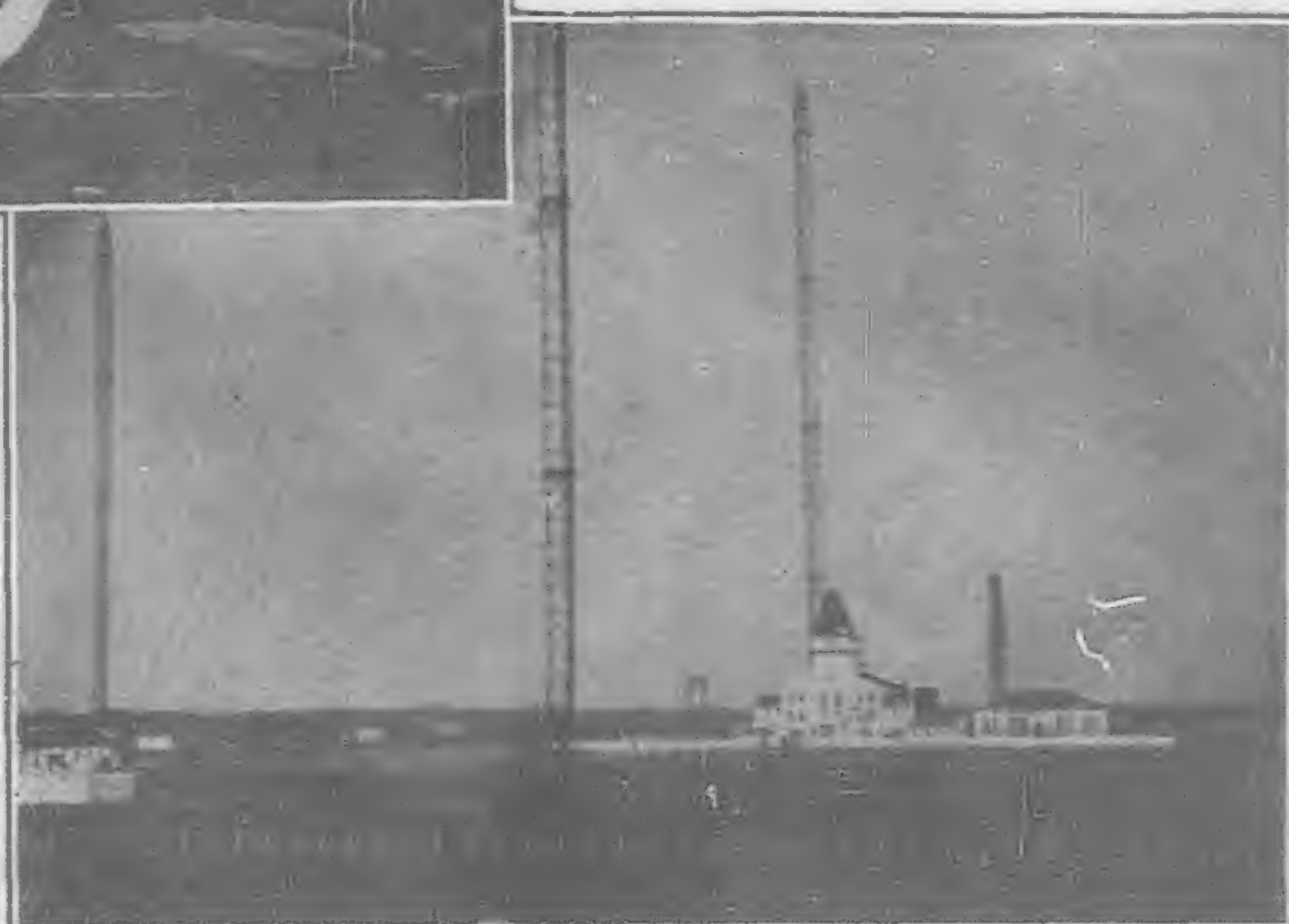
In addition to the above-mentioned 500 K.W. turbo-generators, which are the most remarkable equipment of this station, there are many excellent machines all of the latest type and all manufactured in Japan with the exception of the boilers. The



Despatching Office



Despatching Quarter



Receiving Office

SHUANG-CHIAO WIRELESS STATION

Top: Residential Quarter



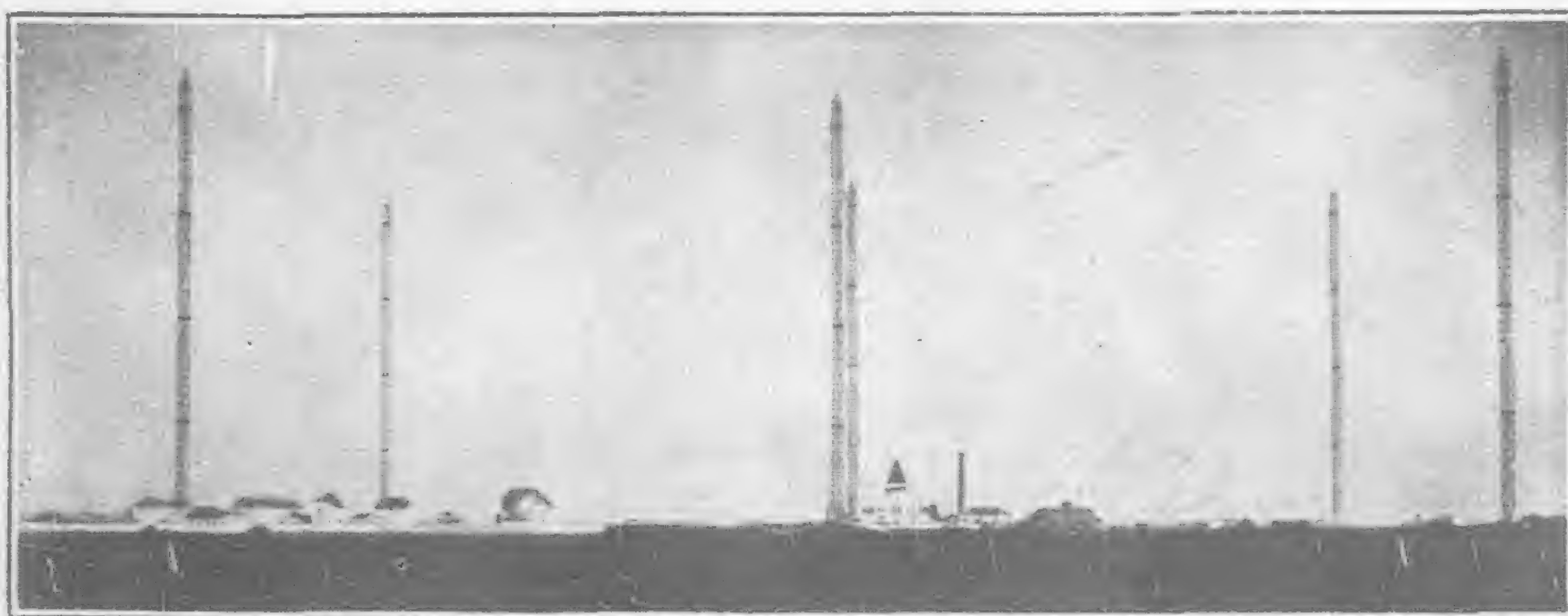
engineering of radio telegraphy is in the course of rapid progress, the latest type at present becoming out of date to-morrow; it was, therefore, deemed inadvisable to adhere to old and obsolete types. Although the new machines were designed according to the latest types, still there appeared some minor details which were capable of improvement, and this was especially apparent after the communication test had commenced. Such defects have now been remedied and the station has attained a perfection which has been apparent to radio engineers who have visited the station.

1. Location and Site.—The station is located about eight miles east of Peking, and near Shuang Chiao, an intermediate railway station on the Peking-Tungchow branch of the Peking-Mukden line. It is within about thirty minutes' reach of the Cheng-Yang-Men station by train or by motor car.

The site comprises an area of about 150 acres (about 1,100 *mow*) including the No. 2 receiving station and the roads. There is a light railway connecting the radio station to the railway depôt for the purpose of conveying heavy material.

2. Buildings.—All the buildings of the station are of brickwork and consist of the following parts:—

The main building is five storied, containing 10 office rooms and two halls, i.e., a transmitting and a boiler room. Attached to the above are a spacious storage battery room and a repairing workshop. The No. 1 receiving station is annexed to the main building by a passage, while the No. 2 receiving station is located about one mile west of the main building. Around the main building there are a coal storage, godowns, and a large and a medium-sized cooling pond.



Main Office and Residence



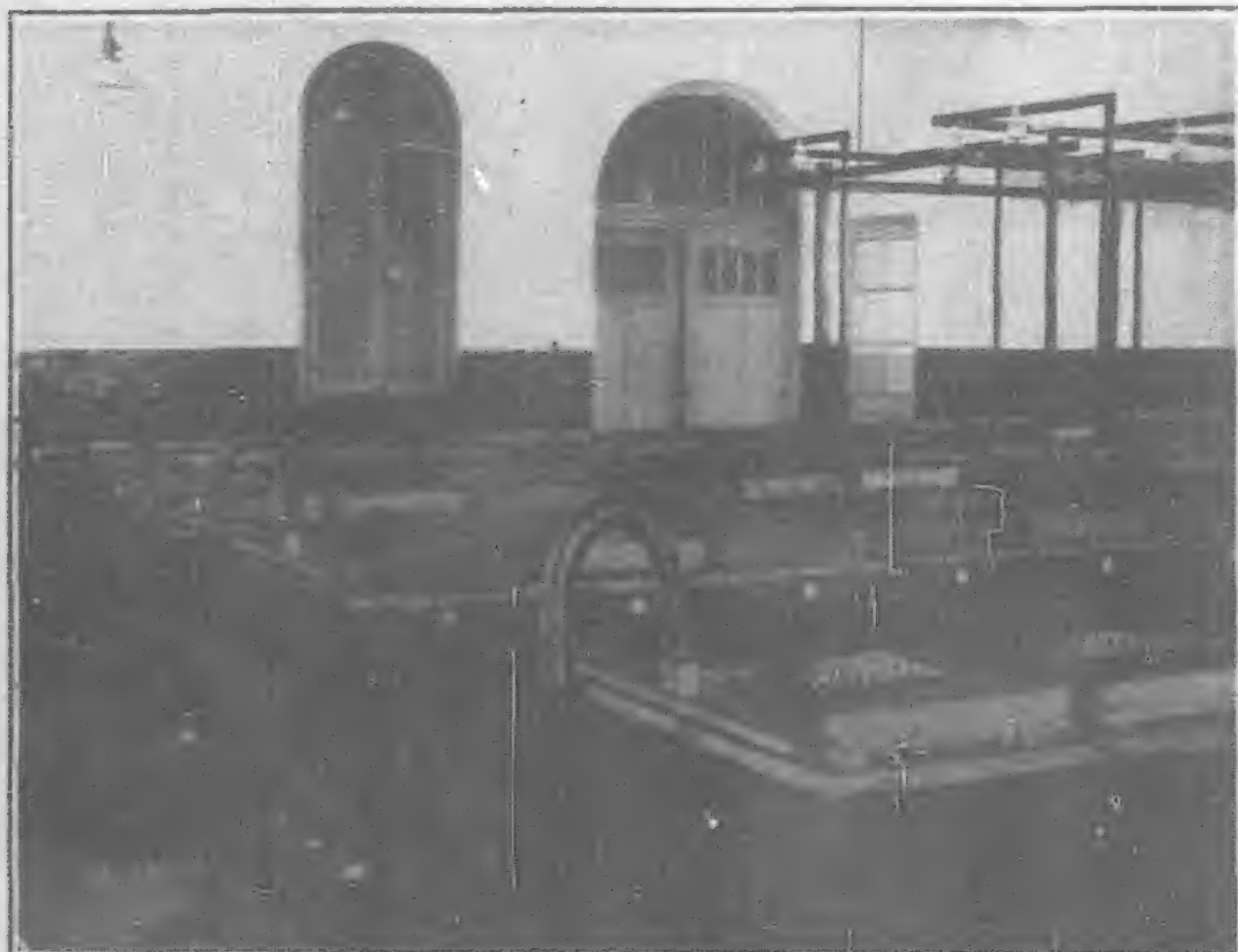
Tesla Coil and Relay Keys

The residential buildings consist of a club, the houses of the superintendent and the chief engineer, Nos. 1 and 2 tenement houses, bachelors' quarters, bungalows for servants, a shed and two store-houses.

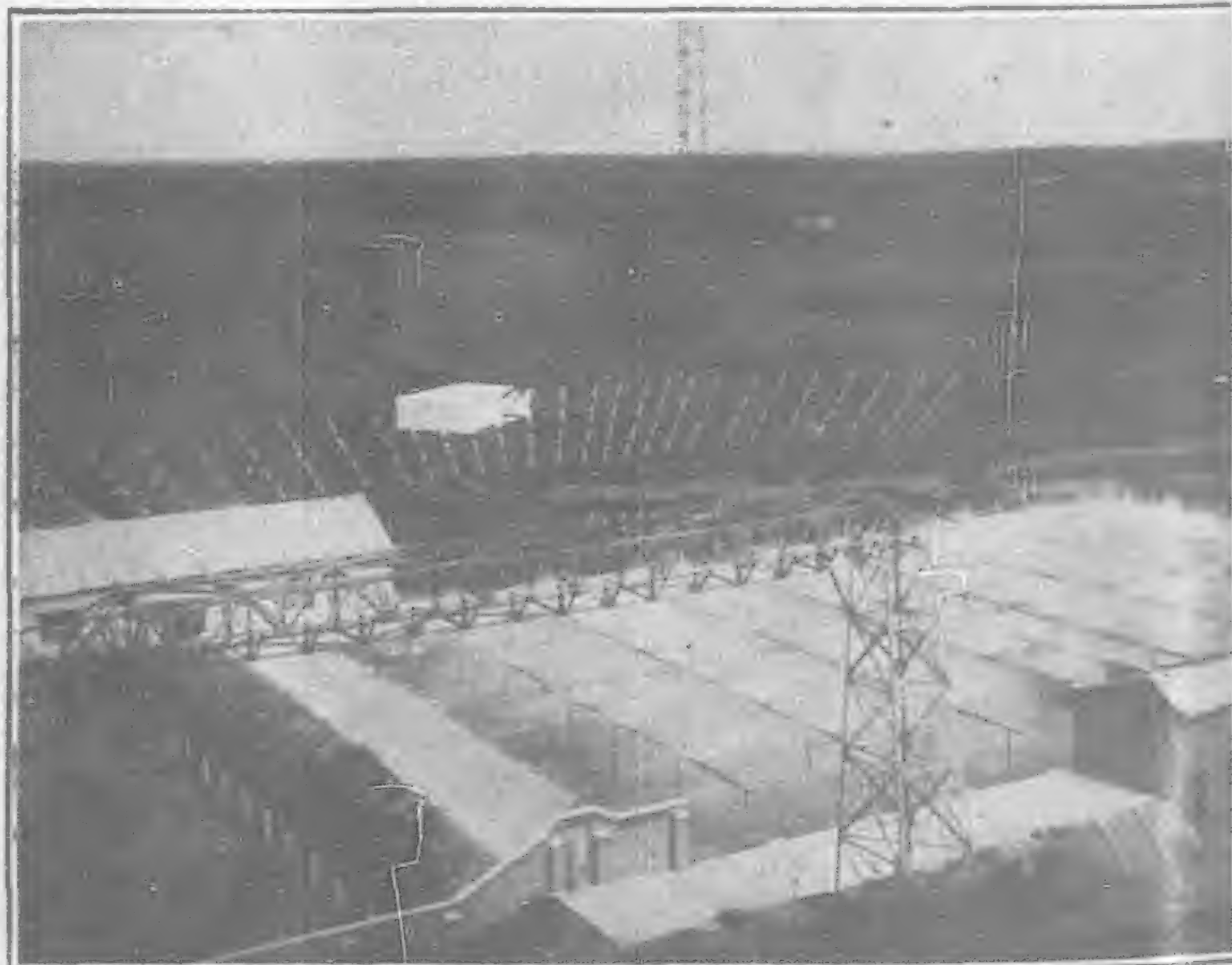
3. Main Equipment.—All the station is of the latest type and has many points worthy of description from the point of view of radio engineering.

There are three large steam boilers manufactured by the Babcock & Wilcox Co., one being a spare. Two sets of 500 K.W. radio frequency generators manufactured by the Shibaura Engineering Works, Tokyo, are installed, each driven directly by a 1,000 H.P. Parson's steam turbine manufactured by the Mitsubishi Dockyard, Nagasaki, one of which serves as a spare. It is also possible to make a parallel running of these two sets to get 1,000 K.W. if necessary. Each turbine has two sensitive governors and three ingeniously designed load compensators, these arrangements enabling the speed variation of the turbine to be kept within one thousandth of a revolution. Though the governor has an appearance similar to that of ordinary power service, by changing the inlet-path of steam by the centrifugal force of flyballs, it contains such delicate mechanism as an oil-filled dashpot and a floating fulcrum in order to obtain a constant speed.

There exists, however, some time-lag in the action of a governor, and it does not work instantly according to a sudden change of speed due to a sudden change of load. The load compensator makes up for this sudden change of speed caused by the sudden change of load, and keeps the speed regular and constant by opening and closing the auxiliary steam-path according to the sending signal. The 500 K.W. high frequency generator has a rigid construction capable of running

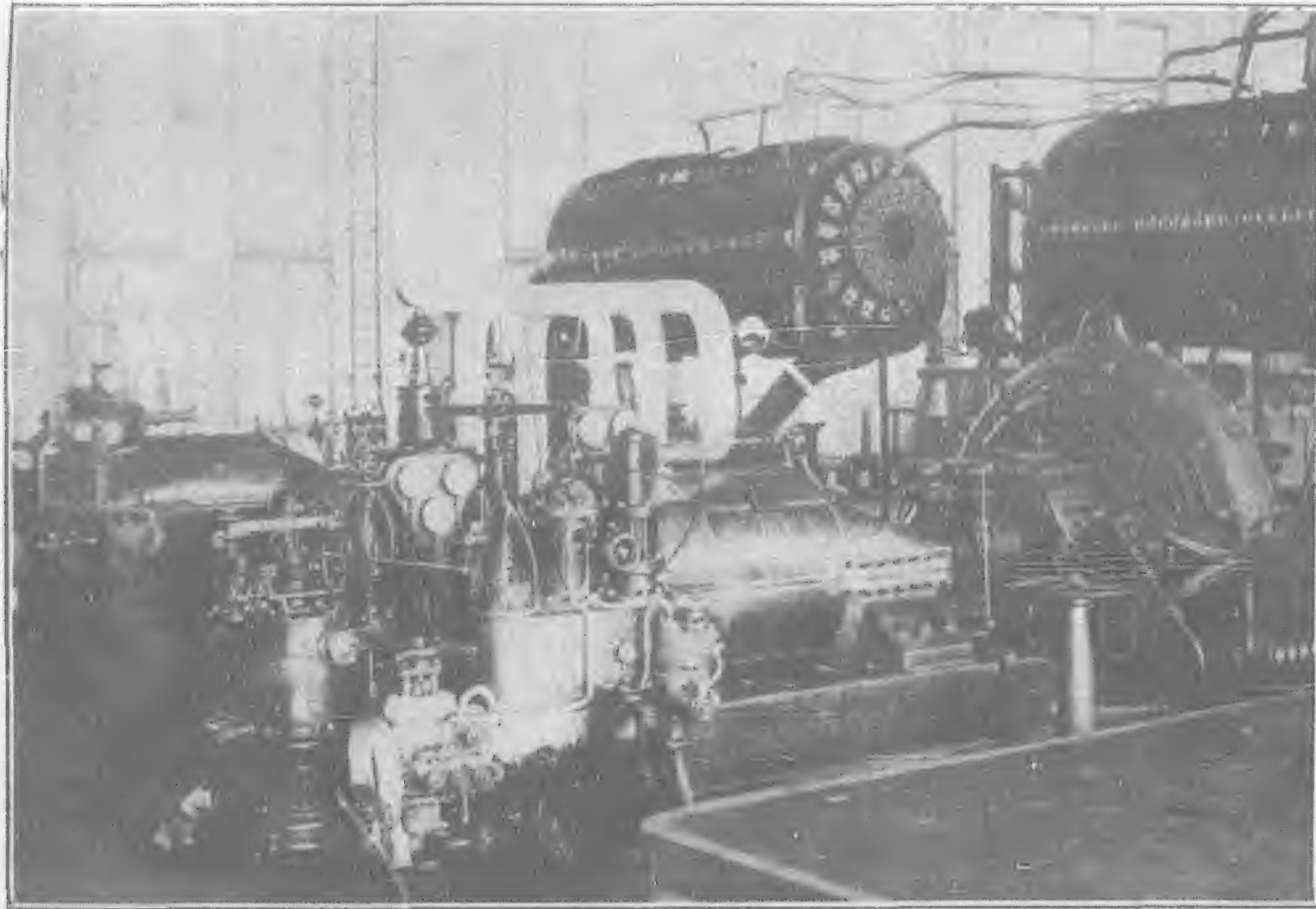


Battery Room

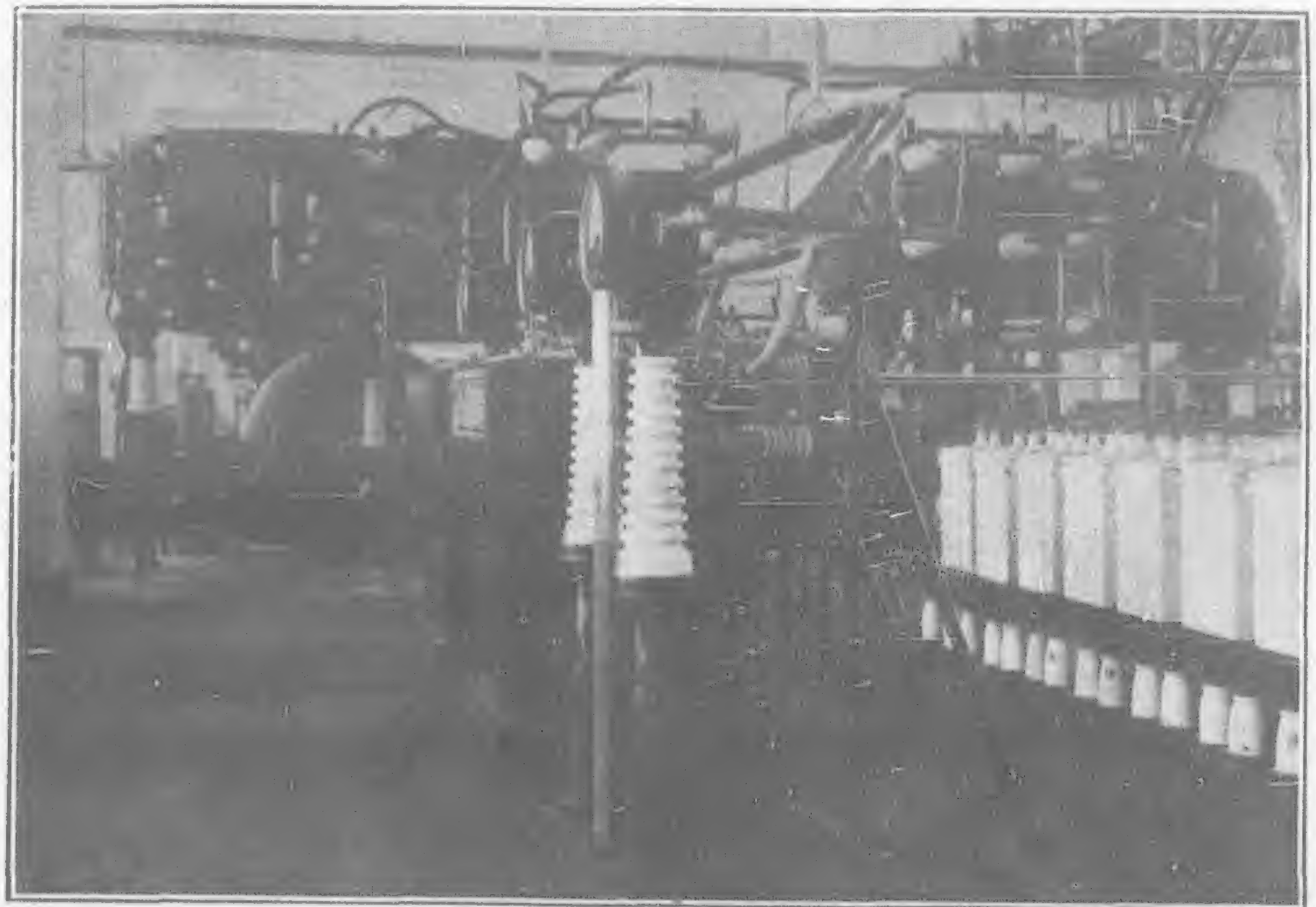


Cooling Pond

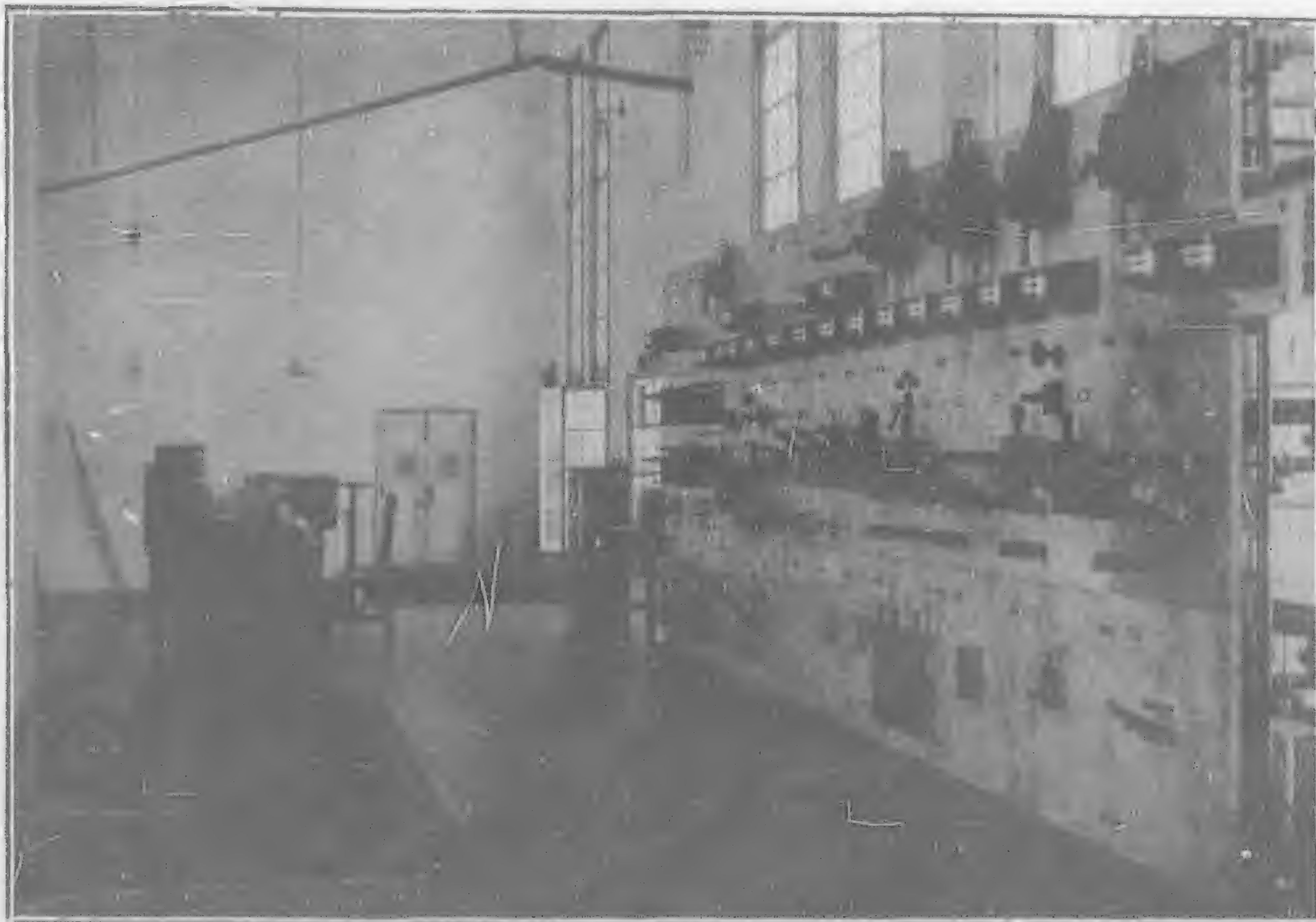




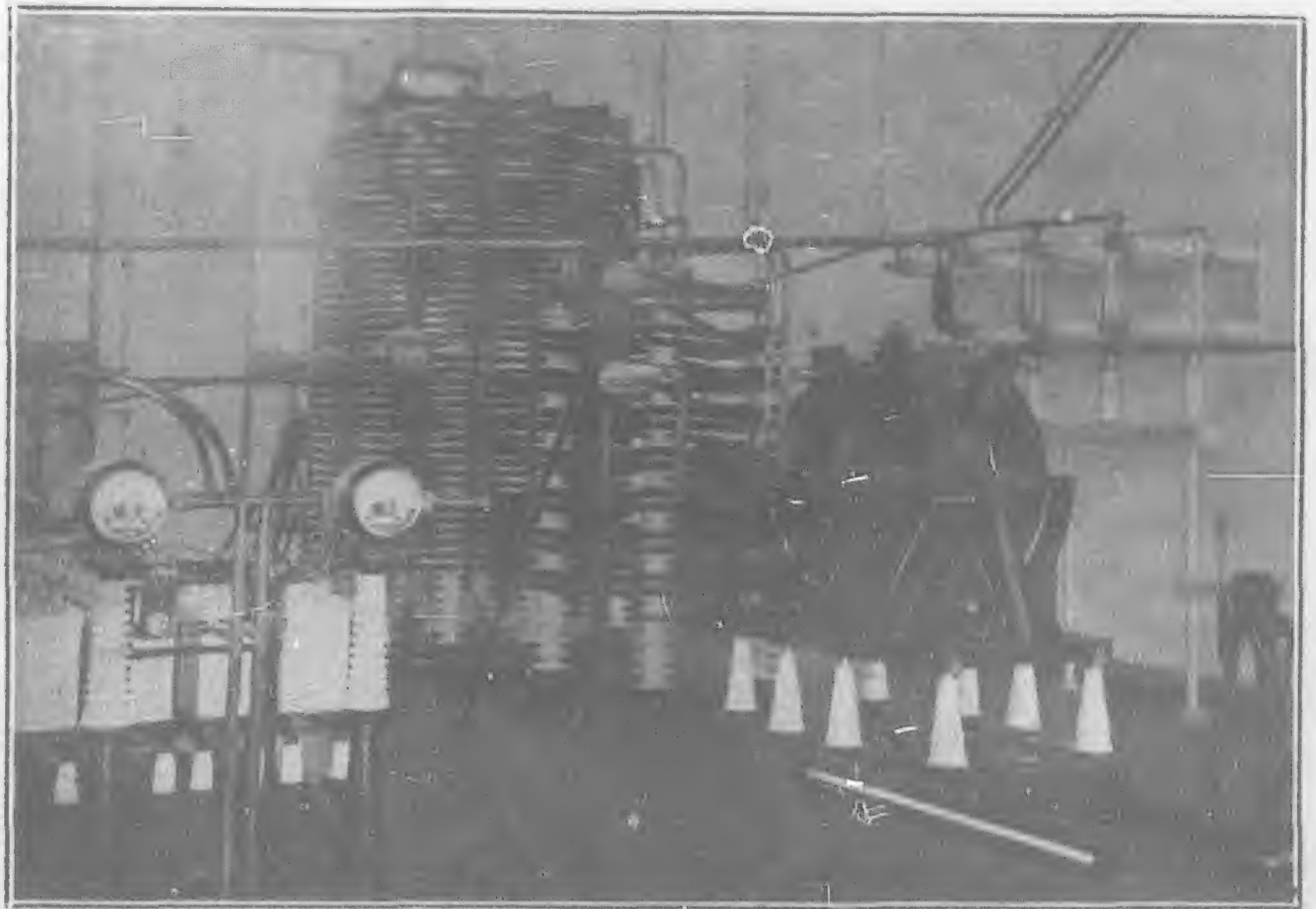
No. 1 and No. 2, 1,000 H.P. Turbine and 500 K.W. High Frequency Generator



No. 2 Generating Room, West Station

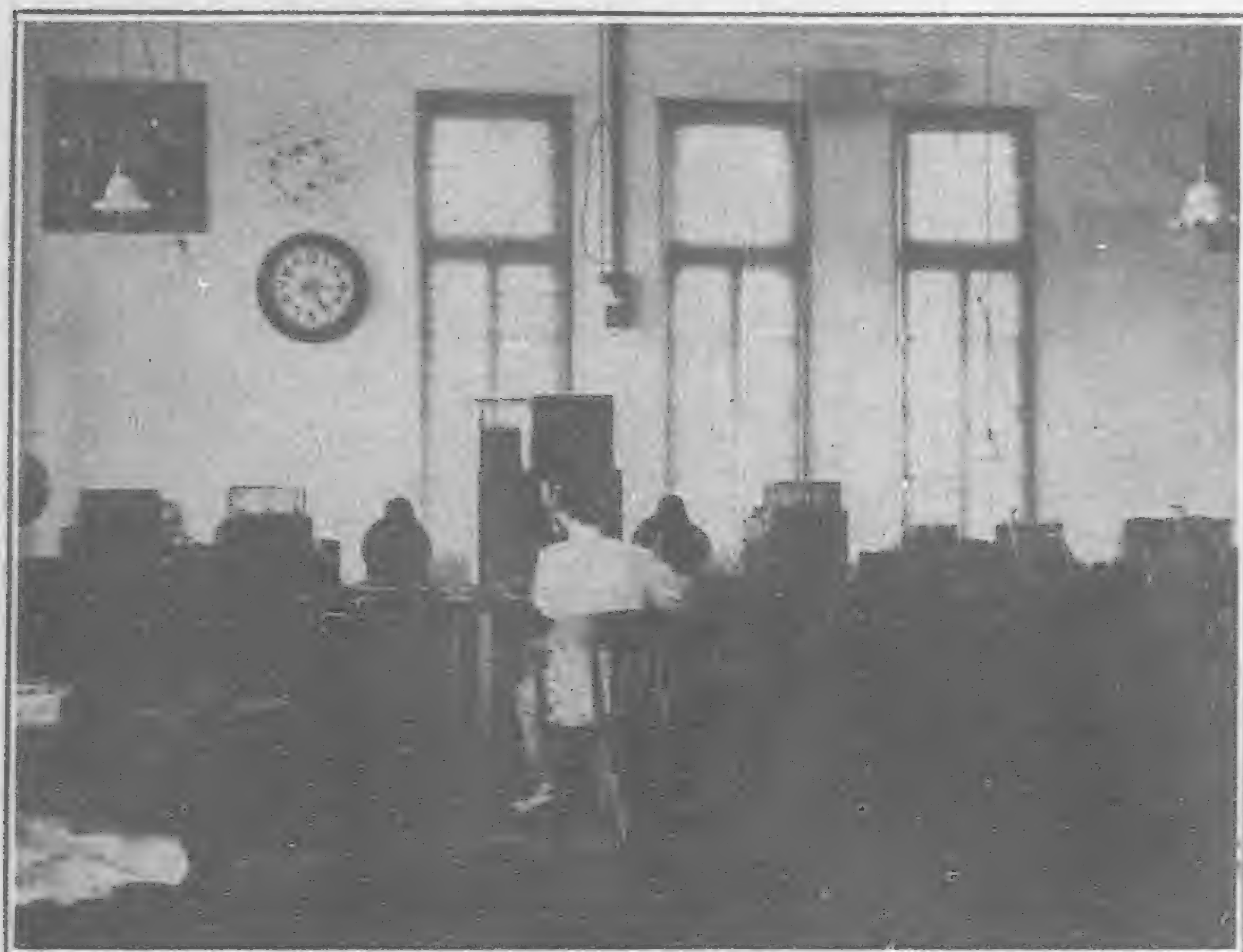


No. 3 Generating Room, West Station



No. 1 Generating Room, West Station





1st Receiving Room



Dining Room at the Club in the Residential Quarter

over 3,600 revolutions per minute, the peripheral speed of its rotor being about eleven miles per minute. It is designed to generate electric power at 20,000 cycles per second or 15,000 metres in wave length, but the operator can readily change its frequency or wave length as desired within a certain limit. This is one of the most remarkable advantages of the equipment, and is a point deserving of particular mention. There are two sets of 120 K.W. dynamo-engines supplying direct-current to the fields of the high frequency generators, controlling devices of antenna current, motors, storage batteries, lamps, etc.

There are 125 storage cells, the capacity of which is 2.052 ampere-hours each. The electric supply from the high frequency generator produces, through a Tesla coil, a variometer, and two inductance coils, high frequency oscillating current in the antenna to radiate electric waves into the surrounding space. In order to modulate antenna current according to signals, mechanical keys working through several intermediate relays are used for short-circuiting the armature coils of the high frequency generator, besides, antenna-inductance changing devices working electromagnetically, are also used for that purpose. There is also a set of frequency changes doubling the frequency, i.e., a device to reduce the wave length of emitted wave into half that of the generator.

Antenna towers, six in all, are of steel lattice-work, triangular in shape, and stayed in three directions, each 210 metres in height and 208 tons in weight. The antenna wires are fastened over these towers in "T" type, their width being 250 metres in the middle, 430 metres at the ends, and their length being about 1,000 metres. The earthing system consists of copper wires buried underground and connected through small coils to aerial wires supported about 12 feet above the ground, so as to obtain equal distribution of current throughout the ground wires.

When sending signals, enormous current flows through this big antenna and gives strong signals to America and Europe, so as to enable communication with them either by day or night.

Receiving antennas are built at the ground of No. 2 receiving house and are connected with the No. 1 receiving room by cable, thus enabling us to receive messages through either of them. In the receiving rooms, receivers of the latest type with automatic high speed sending and receiving apparatus, are provided.

### Results of Tests

It was in July, 1923, when the installation was completed, that the station commenced communication tests with European and American stations within the transmission range of this station, and the results have been quite satisfactory.

The important stations, within the transmission range of this station, and their distances follow:—

Name of Station	Distances from this station in nautical miles.			
Nauen (Germany) .. .. .	3,992			
Ste. Assise (France) .. .. .	4,444			
Bordeaux (France) .. .. .	4,697			
Darnavos (England) .. .. .	4,436			
Bolinas (U.S.A.) .. .. .	5,104			
Haranomachi (Japan) .. .. .	1,139			

With the Nauen, the Ste. Assise and the Bordeaux stations, we can easily establish communication either by day or night. Strong signals can also be given to the stations of the Radio Corporation of America in the United States, and those of the Marconi Company in England. It is superfluous to say that this station will play a most important rôle in the service of international communication when it is opened to the public.

## The Eastern Railway's Traffic

OWING to the present contention over the Chinese Eastern Railway its traffic may be of interest. Goods transported over the Railway in 1923 totalled almost twice the amount transported in 1920. Following are the figures showing the increase in the last four years as compiled by the Chinese bureau of economic information:—

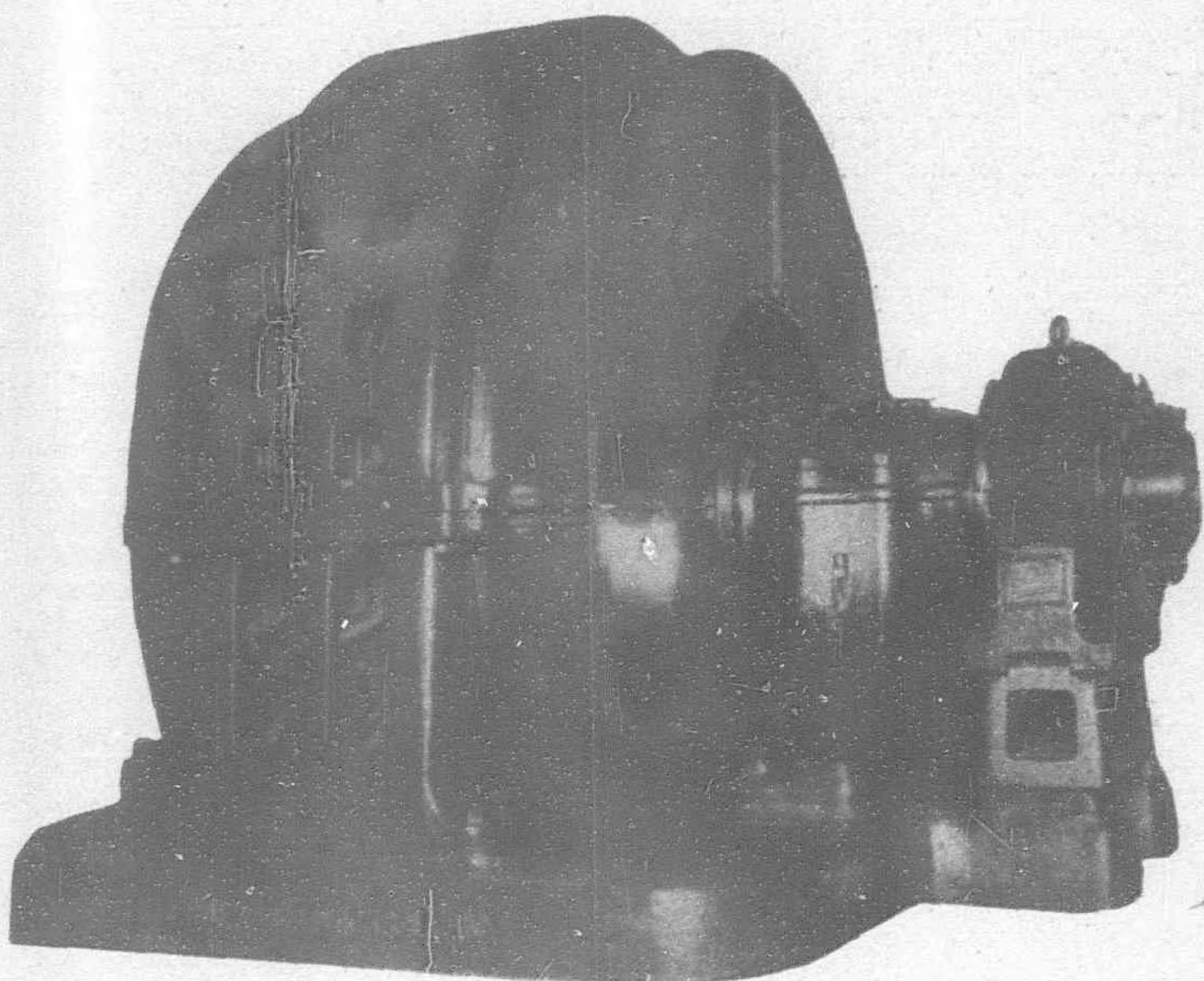
1920, 93,700,000 pounds 100 per cent.; 1921, 124,800,000 pounds 133 per cent.;

1922, 151,500,000 pounds 162 per cent.; 1923, 171,500,000 pounds 183 per cent.

Increases in the important items are hereunder classified (in millions of pounds):

	1920	1921	1922	1923
Cereals .. .. .	60.0	82.5	94.4	100.5
Bean oil .. .. .	0.4	0.4	1.2	1.6
Coal .. .. .	8.6	9.1	12.9	15.2
Salt .. .. .	1.6	2.2	3.8	4.0
Firewood .. .. .	3.3	5.1	6.3	6.2
Lumber .. .. .	3.6	4.9	8.8	11.7
Meat .. .. .	0.5	0.5	1.5	1.7
Hay .. .. .	1.1	1.2	1.9	1.9
Building materials .. .. .	4.1	5.5	6.2	3.4
Other cargo .. .. .	10.5	13.4	15.2	15.8
Total .. .. .	93.7	124.8	151.5	171.5





3,500 K.W.A. General Electric Generator designed to operate automatically

## Japan's Purchases of American Electrical Equipment

### Largest Automatic Hydro-Electric Plant in Japan

The Keihin Denryoku has recently ordered from the General Electric Company the electrical equipment for what will be the largest automatic hydro-electric power generating station in Japan. The station, to be constructed on the Oshiro River, will consist of a 3,500 K.V.A. generator driven by a J. M. Voith Company water wheel with full automatic control designed to perform automatically and in proper sequence all of the operations of starting, running, and shutting down ordinarily performed by the station attendant in a manually operated station. By simply energizing the trans-

mission line from the controlling power station, the wheel is started, the generator is synchronized, and assumes its load.

The equipment includes in addition to the usual protective device of a manually operated station, protection against sustained overloads, hot bearings, low voltage, underspeed, overspeed, and other irregularities usually cared for by the station attendant.

A similar equipment except of smaller capacity has been operating very successfully in a Toho Denryoku power station in Kyushu.

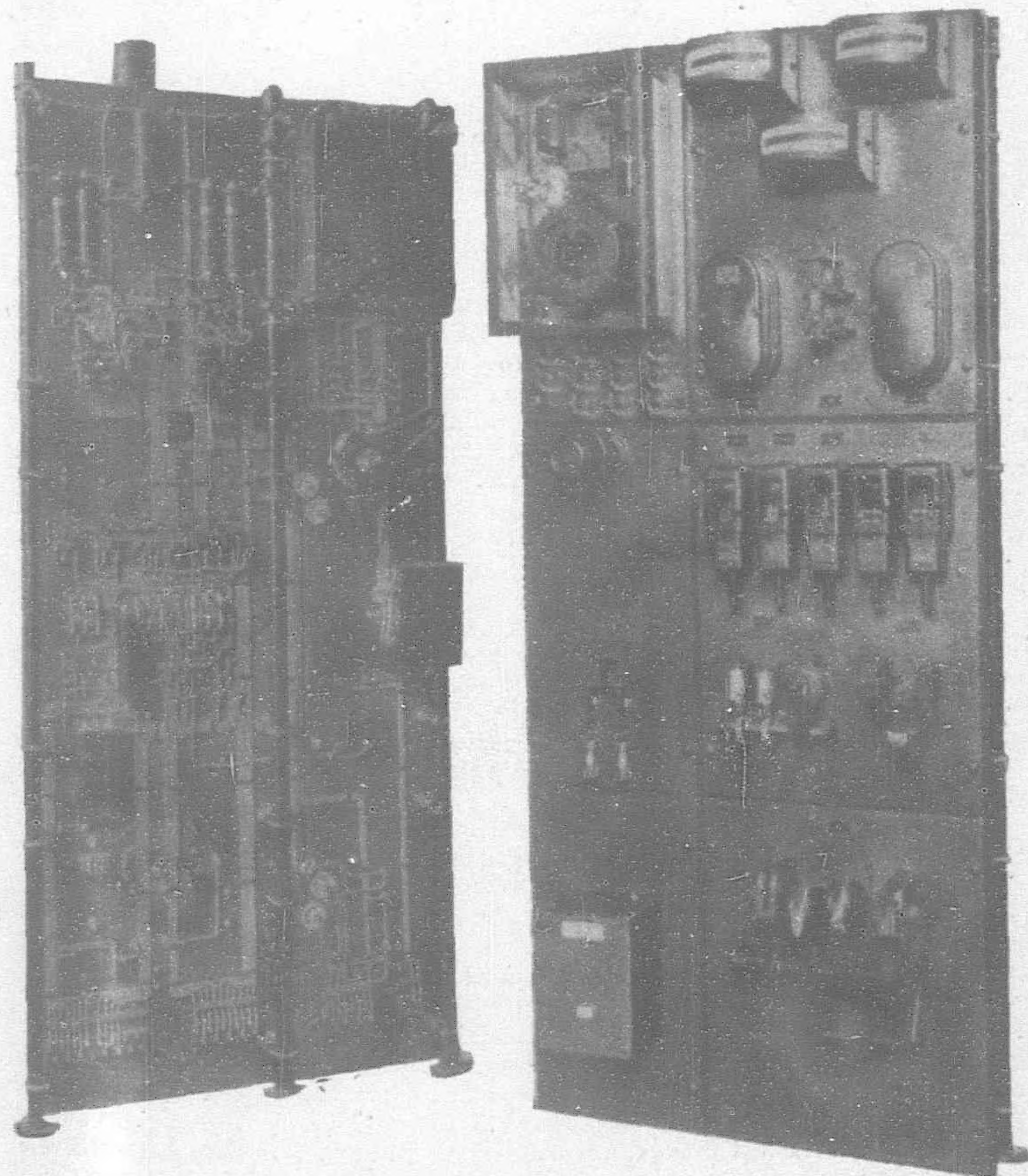
### Westinghouse Equipment for Japan

"American manufacturers of electrical apparatus are now getting approximately 80 per cent. of Japan's increasing demand for these goods, whereas the major part of Japan's electrical orders went to Germany prior to the war. Japan has undertaken the electrification of 6,000 miles of state-owned railways, for which the government will spend about \$50,000,000 a year, guarding against eventualities until this work is completed, of which sum about \$3,000,000 a year will go for electrical equipment incident to the task. These and other details of the Japanese demand for American electrical goods, which at present shows no sign of diminishing, despite anti-American agitation arising from the immigration restrictions," were discussed recently by I. F. Baker, Japanese manager for the Westinghouse International Company, which has received an order from the Japanese government for \$1,500,000 of railway electrification equipment through Takata & Co. This order is in connection with the huge electrification scheme for Japan's railways and covers the equipment for the extension of electrical service in the vicinity of Tokio. It includes eight large locomotives for express service, which eventually will extend from Tokio to Kobe, about 360 miles; ten 2,000 kilowatt 1,500-volt rotary converters, two 2,000-Kilowatt motor-generator sets, with automatic switching equipment, and a large amount of substation equipment.

"It is expected that future orders for electrification material will also be placed in the United States," Mr. Baker said, as the experience of the railways has shown them that the practice in this country is ahead of that in Europe. From tests they have made as the result of trial orders placed with American concerns, the railways also have realized the superiority of American-made goods. This has been due in some measure to the relatively large amount of electrification which has taken place in America in the last twenty years.

Several of the private railways in Japan have been electrified in the last four years and thereby the desirability of electrifying the Government lines has been proved. Electrification is very desirable in Japan, not only because of the dearth of coal, but because of the relatively narrow gauge of 3 feet 4 inches, which seriously limits the size of steam engines. Another advantage is that the smoke in the tunnels, which are numerous in mountainous Japan, will be eliminated.

Mr. Baker said that the electric business turned over to the United States by Japan in the last five years would average \$10,000,000 a year, quadruple the average for the preceding five years. Before the war the Germans had a strong grip on this business, primarily because of the lower prices. It was soon found, however, he said, that electrical apparatus at the cheapest was not the most desirable.



G.E., Automatic Control Panels for the Oshiro Station of the Keihin Hydro-Electric Power Company

*Coal-Tar-Products* such as distilled and prepared tar Pitch, Creosote Oil, Carbolineum, Naphtalin, Carbolic Acid, are offered for supply from own production (yearly production about 25,000 tons).

Asphaltfabrik Rudow,  
DR. ING. WILHELM SCHLIEMANN,

Aktiengesellschaft

Kanalstrasse, Berlin—Rudow



# Engineering and Industrial Notes

## BRIDGES

### AMERICANS BUILD TOKYO BRIDGES.

—Three American engineers will have charge of the construction of two large bridges which are to be erected across the Sumida river by the reconstruction bureau. The engineers are being selected now by the Foundation Company of New York. By applying American methods in the construction of the two bridges, the reconstruction bureau expects to avoid the long delays which occurred in the building of the Shino bridge across the Sumida several years ago. Five years were required in which to complete this work. The Eitai and Kiyosu bridges, the two now to be constructed, are to rest on foundations sunk in the river bed by compressed air.

**NEW BRIDGE FOR TIENTSIN.**—The Haiho conservancy board has accepted the tender of the Etablissements Dade and Schneider, who are represented by Oliver & Co., in China, for the new international bridge at Tientsin. The bridge, which will form a continuation of the Rue de France, is to be of the Scherzer rolling lift type. The cost of the bridge is divided up into Gold \$251,354 and French Francs 2,918,400, making a total of approximately Tls. 549,950. The caissons are expected to arrive in February 1925 and the bridge will be completed in February 1927. It will be supervised by the contractor's engineer and the conservancy commission will probably appoint an engineer to watch the construction of the bridge in their own interests. The bridge is to have two sets of piers on the bed of the river. The abutments will be 306-ft. apart, the facing of each resting on the normal line on either side. Neither of the two sets of piers must reduce the width of the river by more than twelve (12) feet on the site. The bridge will, therefore, consist of three spans. The mobile span will be such that when the bridge is open vessels will have a free fairway of 140-ft. and the structure will be so designed that there shall be no danger of its being fouled by passing steamers.

**NEW HONGKONG BRIDGES.**—Notification has appeared in the *Hongkong Government Gazette* calling for tenders in connection with the widening of eleven bridges in the new territories. This action was taken following a fatal motor bus smash when the jury, finding the men guilty of manslaughter, added a rider to their verdict, that they considered that all bridges in the new territories should be made the width of the roads they span.

**NEW OVERBRIDGE FOR SSUPING-KAI.**—The S.M.R. Co. is planning to build an overbridge over the railway tracks at Ssupingkai station to take the place of the level crossing. The new overbridge will be constructed in the next fiscal year at a cost of Y.400,000, and will be built on such a slight curve as to be practicable for loaded carts.

**TSIN-PU RAILWAY BRIDGE.**—The Tientsin-Pukow railway administration is reported to have imposed a tax of two copper cents on each passenger ticket, to raise funds for repairing the railway bridge across the Yellow River at Lokou. As the insurance on the bridge in question will expire next October, the department of communications will detail Mr. Chai Chao-lin to Tsinan to inspect the bridge structure and take steps for repair.

**TUMEN RIVER BRIDGE.**—The question of bridging the Tumen River has been pending between China and Japan for the past several years, but the Chinese feared that the bridge would enable the Tienpaoshan-Tumen railway to be connected with the Korean railway, as a military measure, refused to permit the work. Now that a section of the Tienpaoshan-Tumen line has been built, the Japanese consul-general

at Chientao again has approached the *taoyin* of Yen-chi district for the solution of the question and the commissioner of foreign affairs at Mukden has agreed to the plan. The bridge will be built under the joint enterprise of China and Japan, the portion of expense to be shared by China being defrayed out of the royalty to be paid by the Tien-Tu railway. The commissioner of foreign affairs at Mukden has been appointed chief of the Chinese officials superintending the bridge construction.

## COTTON MILLS

### SPINNING MILL AT CHINCHOU.

The construction of the new Chinchou spinning mill of the Naigai Raw Cotton and Spinning Co., Ltd., has made good headway. The first installation of machinery arrived in April, on the completion of the mill buildings and the second installation was finished early in May. The new plant soon will be opened with 20,000 spindles in operation.

## ELECTRICAL

**HANKOW WATERWORKS WANTS TRANSFORMERS.**—The Hankow Waterworks and Electric Light Co., Ltd., is calling for tenders for nine 1,000 k.v.a. transformers (2,300-6,000 volts), together with extra high-tension and low-tension switchgear and other gear necessary for the equipment of two transformer stations. Specifications and forms may be obtained from the head office of the company, Taiping Road, Hankow, at a cost of \$10.00, silver. Sums paid for copies of specifications up to three will be refunded on receipt of a *bona-fide* tender. These tenders, submitted in duplicate and marked "Tender for transformers, etc.," must be declared at the company's head office by not later than noon of September 30.

## MACHINERY

**CRANES FOR JAPAN.**—Export contracts have been placed in America for seven large cranes for shipment to Japan. An industrial works has received an order for four cranes of which two are for the railroads in Japan and two for the reconstruction bureau of the Japanese government. Another American manufacturer has just closed contracts for three large cranes for the Japanese reconstruction bureau.

**DRYING MACHINERY IN JAVA.**—Drying machinery for coffee is a subject which is commanding great attention at present among estate owners and machinery importers in Java, according to Vice-Consul Rollin R. Winslow, of Soeraboya, Java. The first types used were similar to the American hot-air furnace, but this system, however, has recently been supplanted by a central water heating system of a patented Dutch design that furnishes hot water to a series of radiators in the outlying drying houses. There is much room for improvement in the method of drying coffee and rubber, and any new system which would lessen the time required for drying would probably meet with success in East Java. Until a new system is introduced, it is believed locally that the hot-water system of central heating with radiators, etc., will be the most popular one in Java markets. Many of the estates which had the hot-air systems have supplanted them with central heating plants.

## MINES

**ANSHAN & PENCHIHU STEEL WORKS.**—Mr. K. Takemura, councillor of the S.M.R. Co., reports that the new expansion program of the Anzan Iron & Steel Works has been well started and that the PENCHIHU iron and steel works is now turning out about 40,000 tons of pig iron a year by use of one of the blast furnaces.

The rich ore of PENCHIHU will be exhausted in seven or eight years hence. But, an immense quantity of low-grade ore is obtainable, which, by a new method of concentration, should vastly prolong the life of the mines.

## CHINESE MINING ENCOURAGED.

The Chinese ministry of agriculture has addressed the following instructions to the provinces for the development of mining products: Where government mines have already been opened, work should be expedited and detailed reports should be submitted to the ministry: A complete list of gain and loss and the daily volume of production of all the government mines in the provinces should be submitted to the ministry; where government mines have not been operated, work should be started at once. If the provincial government is financially unable to carry on the work, it may start a joint enterprise in conjunction with the local merchants; where work is suspended in the case of government mines, a report to that effect should be submitted to the ministry; profits made on government mines should be carefully deposited; the government mining bureaux must consult with the ministry from time to time and directors of government mines should constantly confer with the experts and engineers for better means of production and sale.

## COAL RESERVES OF FUSHUN MINES.

—Estimates vary widely as to the total coal reserve held by the Fushun Collieries regarded as the richest coalfield in the Orient. Some geologists put the total at 1,000,000,000 tons, which may be assigned to the different shafts and pits as follow:

	Tons
Oyama shaft ... ..	130,000,000
Chienchinchai pit ... ..	135,000,000
Yangpaipu pit ... ..	38,000,000
Togo shaft ... ..	70,000,000
Laohutai pit ... ..	153,000,000
Wanta pit ... ..	163,000,000
Hsintun pit ... ..	150,000,000
Lungfeng pit ... ..	160,000,000

So far the outputs from the different pits are as follow:

	Tons
Oyama shaft ... ..	4,000,000
Chienchinchai pit ... ..	9,000,000
Yangpaipu pit ... ..	6,000,000
Togo shaft ... ..	4,000,000
Laohutai pit ... ..	5,000,000
Wanta pit ... ..	1,000,000
Hsintun pit ... ..	400,000
Lungfeng pit ... ..	900,000

Total ... .. 30,300,000

There still remains something like 970,000,000 tons available for mining. Of course, the consideration of mining costs and other factors might prevent part of the vast coal reserve from being mined but even with an eventual output of 7,500,000 tons, according to the present program, coal will be available for 130 years hence.

**COAL TRADE OF HONGKONG.**—Coal imports—about 82 per cent. of which were bituminous—into Hongkong for the year 1923 amounted to 1,403,491 tons, as compared with 1,048,175 tons in 1922 and 1,175,871 tons in 1921. About 33 per cent. of the bituminous coal comes from Japan, 31 per cent. from Formosa and adjacent islands, and the remainder from North China, Manchuria, South Africa, and Borneo. All of the anthracite coal comes from Indo-China with the exception of about 10 per cent. which is supplied by Great Britain for the use of the British navy. About 25 per cent. of the local coal imports are re-exported to nearby ports for use by small river steamers and launches and by manufacturing plants.

**COPPER-MINING IN INDO-CHINA.**—Copper-mining concessions for the exploitation of the deposits at Luang-Prabang, Laos, have been granted to the Société des Mines de Cuivre du Haut-Mekong, in order to determine whether the deposits are important enough to mine on a large scale. The société has a capital of 500,000 francs and its head office is at 126 Rue de Provence, Paris.



**FORMOSAN COAL OUTPUT.**—The output of coal in Formosa during 1923 was approximately 1,380,000 tons, an increase of 130,000 tons and 390,000 tons respectively as compared with 1922 and 1921. Of this amount 420,000 tons was for home consumption, whilst 270,000 tons was absorbed for bunkering purposes. The exports amounted to 665,000 tons, of which 180,000 tons went to Japan. The exports to Japan show a slight falling off, probably due to the effects of the earthquake, but this decline is more than made up for by the increased exports to foreign countries. Consumption in the island is not expected to show any material change during the current year except that the Takao cement factory will soon be working at full pressure, and will require largely increased supplies. With the completion of the Gyuchoko special coal wharves at Keelung, the greatly enhanced facilities that will be available for bunkering are expected to bring a substantial addition to the number of ships calling for that purpose.

**FUSHUN COAL FOR MANILA.**—The total annual coal consumption at Manila is about 500,000 tons, according to Mr. I. Ogawa of the S. M. Railway sales office. Up to two years ago, only 40,000-50,000 tons of Fushun coal used to be sent in that direction. The Filipinos take very kindly to Fushun coal, especially lump coal, so easy to catch fire and also to handle. The demand has increased rapidly until some 35 per cent. of the whole consumption now is Fushun coal, with promise of further increase. Of the import coals, Japanese coals take the first place in Manila, followed by outputs from Fushun, Australia, India, etc.

**KENJIHO WORKS OF CHOSEN.**—The Kenjiho Iron & Steel Works, Chosen, under the management of the Mitsubishi Company, is producing some 10,000 tons of pig iron from two blast furnaces. Owing to shortage of ore, new supplies must be bought. This handicap casts a doubt as to its future despite its favorable situation. It commands ample railway and steamer facilities and the works are splen-

didly equipped, so that even importing of ore may not impair its ability to operate at a profit. The works owns a steel manufacturing installation capable of producing thick plate and angle of about 50,000 tons a year, but this installation is now left idle, pending the return of Mr. Matsuda, its superintendent, who is now abroad, studying steel manufacture.

**NATIONALIZATION OF JAPANESE COAL PROPOSED.**—As a means of solving the fuel question of Japan, the nationalization of coal has been proposed. The coal production estimates in Japan for this fiscal year are about 28,000,000 tons, inclusive of Formosa, Chosen, and the Loochoos. Besides, the import of 1,300,000 tons of Fushun coal, not to mention a large quantity of foreign coals, must be reckoned with. The importation of coal from abroad in such increasing quantity has formed a menace to Japanese coal mine-owners, who find it extremely difficult to carry on under the existing circumstances.

From a permanent national point of view, the nationalization of coal is suggested as most timely. At the present pace, the coal reserves in Japan are threatened with exhaustion in 50 or 60 years. By nationalizing coal, the coal outputs in Japan may be reduced, and the whole of the deficit may be supplied with Fushun coal by increasing the annual production from 5,500,000 tons to, say, 9,000,000 tons or even 10,000,000 tons.

**LUAN-YEN IRON FIELD.**—Reorganization of the company holding the valuable iron mines at Lungkuan and Yentungshan, along the Peking-Shuiyuan railway, is a near possibility as the shareholders of the corporation have elected Admiral Wu Yu-lin, minister of communications, managing-director. These mines were originally discovered by Mr. Anderson, a Swedish mining engineer and adviser to the ministry of agriculture and commerce, and the mining corporation was organized by several Anfu leaders, with the support of Marshal Tuan Chi-jui, ex-premier. The company started work with a capital of \$5,000,000. During

the world war, large quantities of iron ore were sold to western purchasers and Japan, and subsequently a loan of two million dollars was contracted from the Sino-Japanese Exchange Bank for the erection of modern furnaces at Yentungshan. The political defeat of the Anfu party caused great confusion in the administration of the corporation, and at the present time, the company is practically moribund although the iron ores it controls are reported to be equal in quality to the Tayeh iron ores of the Han Yeh Ping Corporation, and the Japanese iron mines at Fushun. The Anfu leaders have now transferred their rights to the Chihli leaders and it is reported that Japanese and other foreign capitalists are willing to raise funds for the successful development of the mines provided the management of the Chinese corporation be thoroughly reorganized on modern business lines. Admiral Wu Yu-lin, on account of the pressure of his duties, has appointed Mr. Sheng Chi, technical expert of the chiaotungpu, as the resident director of the Lung-Yen mines.

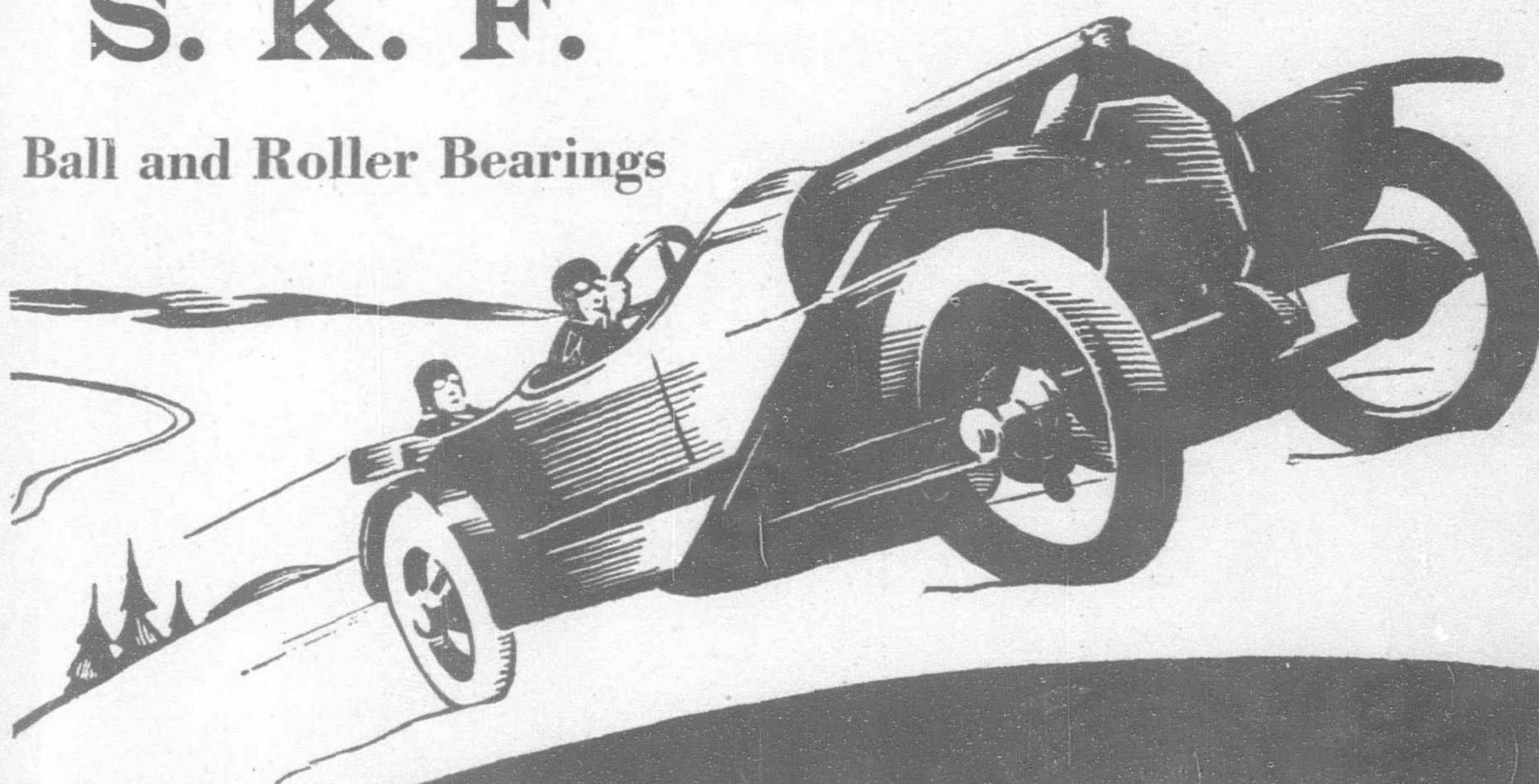
## PETROLEUM

**OIL PROSPECTS IN LEYTE, P. I.**—Leyte offers greater prospects for oil than the Bondoc peninsula, according to Victoriano Elicano, chief of the division of mines and assistant director, bureau of science. Elicano returned recently from geological explorations in Leyte, Albay and Cebu. The Richmond Petroleum company has been unsuccessful so far in its attempts to strike commercial deposits of oil in the Bondoc peninsula. The presence of two favorable structures wherein oil might be accumulated was confirmed by Elicano. These structures, on the Balinsilang Oil company's lease in Leyte, although not perfect, mark the zone where drilling might be started. Presence of the structures, however, do not imply necessarily the existence of oil.

Elicano also inspected coal conditions, visiting the Ligan coal mine at Ligan and the Calanaga Coal Mining company at Caracaran. Both mines are in the development stage and

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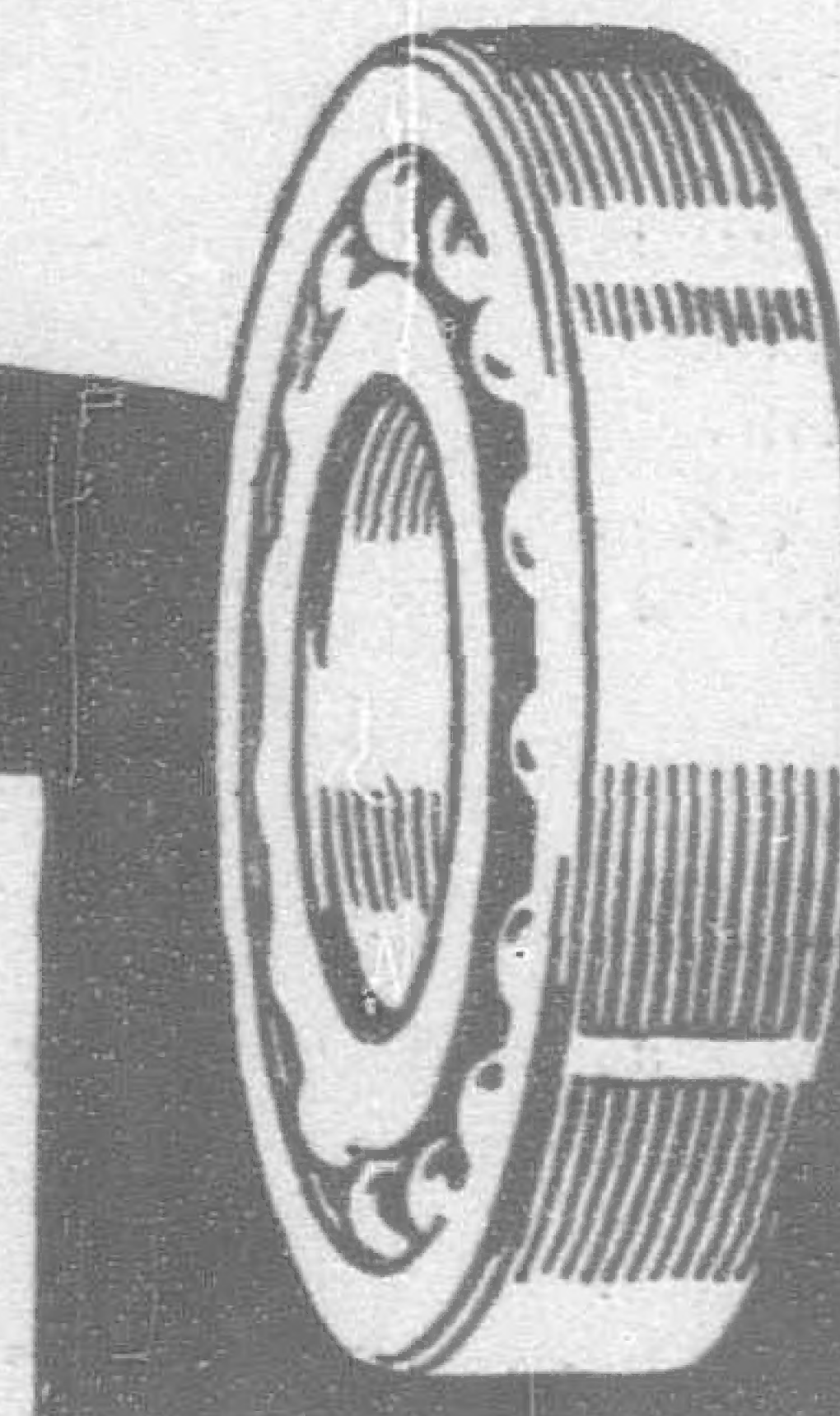
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production is small but the mines show the varied possibilities of the Philippines in natural resources. Folding and faulting make systematic development of the mines difficult and expensive but the geological phenomena helps to make the quality of the coal better than that found in other parts of the islands. He urge caution in development of the mines. Liguan coal is used by Legaspi and Tabaco steamers while Calanaga coal is used by the Manila Railroad company. Elicano also visited the Cebu Portland Cement company's plant and said that test by the bureau of the Cebu cement demonstrate a quality that can be compared favorably, if it is not superior, to imported cement.

#### RIVERS AND HARBORS

**DREDGING SOOCHOW CREEK.**—According to two letters received by the Shanghai general chamber of commerce from the Chinese general chamber of commerce, the funds necessary for the conservancy of the lower part of the Soochow creek have been successfully raised through the co-operative efforts of the public organizations of the eight districts concerned and the commercial bodies of Shanghai. It is promised that the work of relieving the congestion will begin immediately.

**MIN RIVER DREDGER CONTRACT.**—The Min river conservancy board at Foochow, China, has awarded a contract for the suction dredger to a Shanghai firm as agents for a manufacturer in Scotland. In all 20 tenders were submitted, among which were four bids from American firms.

**S.M.R. CO. AND THE LIAO RIVER.**—The S.M.R. Co. has invested over Y.2,000,000 in conservancy work on the Liao during these 15 years. For the current year, the company has set aside Y.50,000, which is expected to be the last disbursement to be made by the company on this work, for the present.

#### RAILWAYS

**CELEBRATE 10,000th MILE.**—At the call of the Japan railway association a celebration of the completion of 10,000 miles of government and private railways will be held on an elaborate scale with Osaka as its centre on October 3, 4 and 5. Among concerns, participating in the celebration are the N.Y.K., O.S.K., T.K.K., Kyoto, Osaka, and Kobe municipal tramways, six Osaka suburban tramway companies, and the Train-making Co., Fujinagata Dockyard, Kawasaki Dockyard, factories in Niigata and the Sumitomo Steel Works. All these are closely connected with the railways and transportation. As expenditure for the celebration Y.200,000 is to be provided, the railway association contributing Y.50,000, and the participants Y.150,000.

**DOUBLE GAUGE GOODS WAGONS.**—The South Manchuria Railway Company has successfully carried out an experiment with goods wagons adjustable to tracks of different gauges. They are especially designed for use in the proposed through traffic service of the Chinese Eastern Railway and the South Manchuria Railway. Through traffic will be greatly facilitated by the use of these cars avoiding the inconvenience of unloading and reloading at Changchun. The Chinese Eastern Railway has a gauge of 5-ft. and the South Manchuria Railway's gauge is 4-ft., 8½-in.

**HEILUNGKIANG RAILWAY AGREEMENT.**—The Heilungkiang government is reported to have drawn up an agreement with a Russian capitalist for the construction of the Hu-ai railway. According to Chinese newspapers, the following are the contents of the draft agreement:—With the approval of the officers, citizens, merchants and people of Heilungkiang as a whole, the Russian merchant, Hsieh Chieh-ssu (Chinese name of the Russian capitalist) shall advance the construction of the Hu-Ai railway which shall start from the Sungari town of Hulun on the north bank of the Sungari River and end at Aikiang *hsien* via Hulun, Suihua, Hailun and Wangkuei. The line is 840 li long.

Hsieh Chieh-ssu shall be responsible for building the whole line, purchasing lands along the line and building stations, offices for selling tickets, and godowns and for all other expenses. Beginning from the date of the assumption of train services, Hsieh Chieh-ssu shall be permitted to be the manager of the line for eighteen years after which the line shall be unconditionally returned to China. The annually profits of the line shall be divided between China and Hsieh Chieh-ssu at the rate of 30 per cent. and 70 per cent. respectively.

China shall appoint the assistant director, and station masters of all the stations and have the right to audit the accounts of the line. The right of protecting the line shall belong to the Chinese troops along the railroad to be freely detailed and recalled by China. The line shall supply them with expenses and ammunition. Within two months of the signing of this agreement, construction work shall begin, otherwise the agreement shall lapse.

**LEVELLING S.M. RAILWAY.**—The work of lowering the level of railway track about Liaoyang has now been under way two months, contracts for the work having been awarded to several Japanese firms. In view of the approach of the rainy season, the work will be pushed forward with utmost dispatch. The entire work, including materials, is estimated to cost about Y.300,000. The work includes a bridge over the Lingkungting, a new concrete culvert, with embankments and retaining works.

**NEW DAIREN STATION BUILDINGS.**—The new Dairen station buildings are to have 2,000 *tsubo* in total floor space, and are to be built at the west of Nippon bridge. The construction work will extend over three years, and will cost about Y.2,500,000. For the current fiscal year, Y.100,000 is set aside for the foundation work, most of which is to be finished within this year. The Nippon bridge, which is only 15.5 metres wide, is to be broadened by 10.5 metres on the western side. The tramway will be double-tracked.

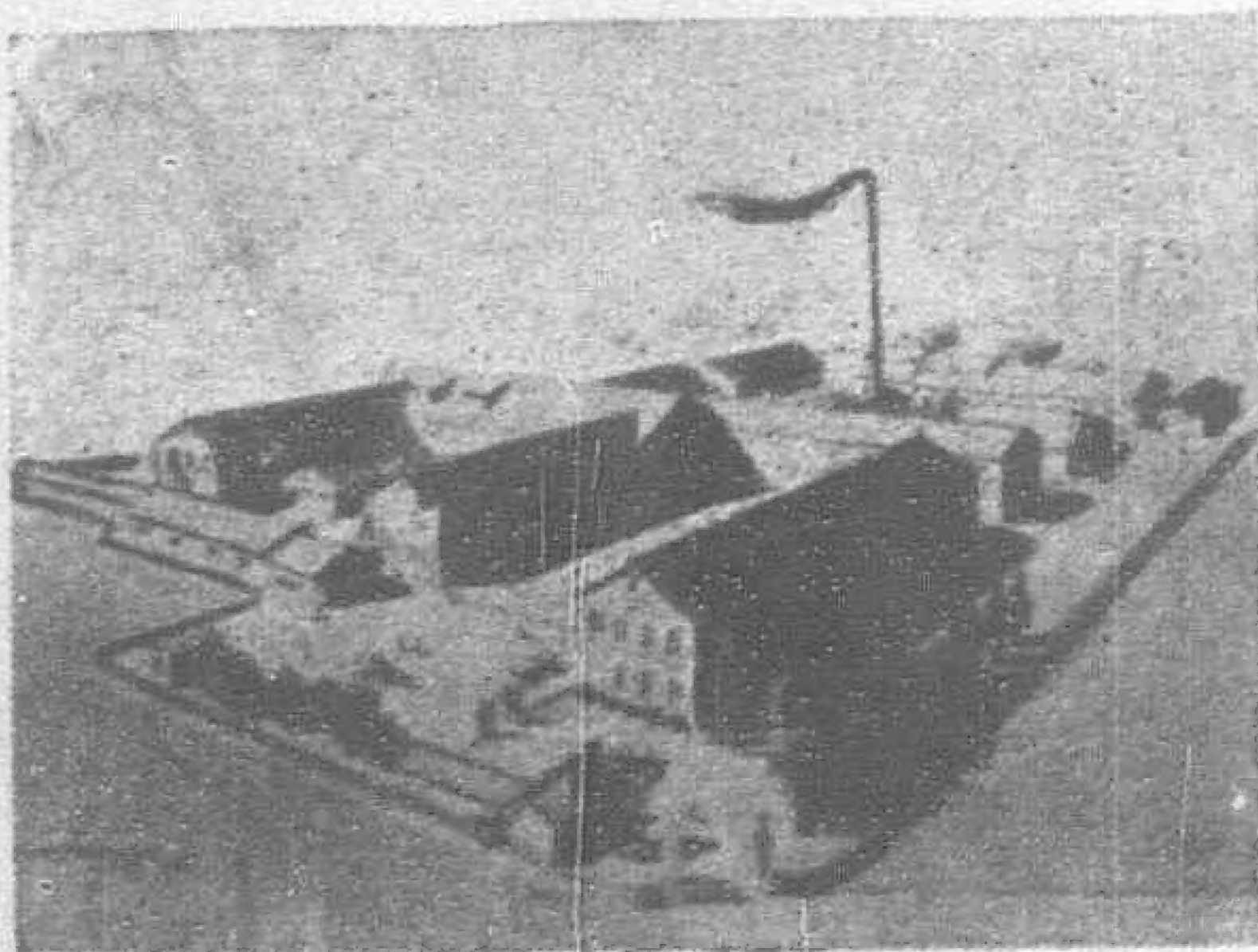
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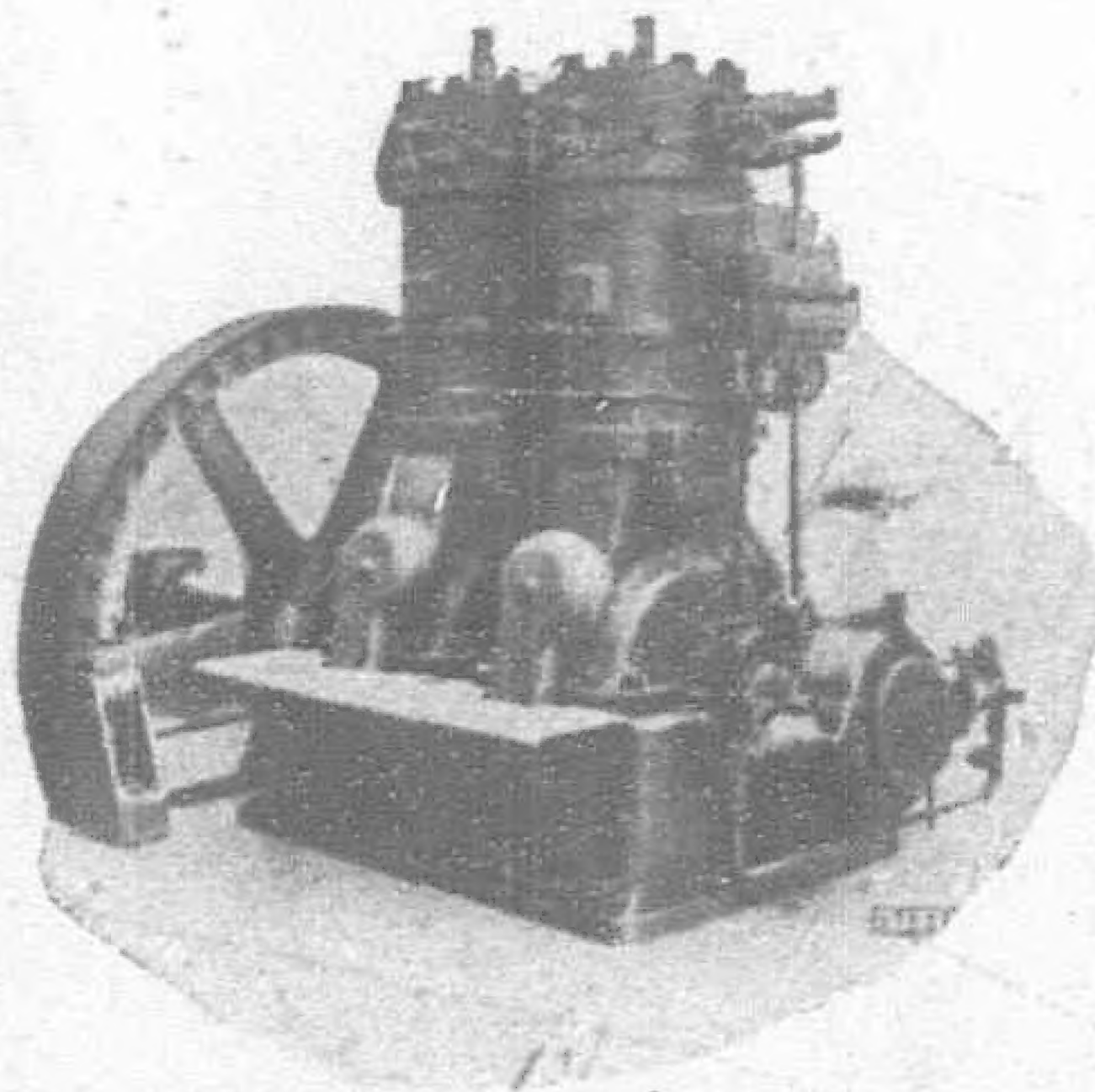
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